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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109
DEPARTMENT OF COMPUTER SCIENCEAND ENGINEERING

Course File

18CS734 – User Interface Design

VII Semester 2023-24

Faculty In-charge
Meena G
Asst. Professor
Dept of Computer Science and Engineering
KS School of Engineering & Management, Bangalore

K. S. SCHOOL OF ENGINEERING AND MANAGEMENT

VISION

To impart quality education in engineering and management to meet technological, business and societal needs through holistic education and research.

MISSION

K.S. School of Engineering and Management shall,

- Establish state-of-art infrastructure to facilitate effective dissemination of technical and Managerial knowledge.
- Provide comprehensive educational experience through a combination of curricular and Experiential learning, strengthened by industry-institute-interaction.
- Pursuesocially relevant research and disseminate knowledge.
- Inculcate leadership skills and foster entrepreneurial spirit among students.

Department of Computer Science and Engineering

VISION

To produce quality Computer Science professional, possessing excellent technical knowledge, skills, personality through education and research.

MISSION

Department of Computer Science and Engineering shall,

- Provide good infrastructure and facilitate learning to become competent engineers who meet global challenges.
- Encourages industry instituteinteraction to give an edge to the students.
- Facilitates experimental learning through interdisciplinary projects.
- Strengthen soft skill to address global challenges.

USER INTERFACE DESIGN (Effective from the academic year 2018 -2019) SEMESTER – VII			
Course Code	**18CS734**	**CIE Marks**	40
Number of Contact Hours/Week	3:0:0	**SEE Marks**	60
Total Number of Contact Hours	40	**Exam Hours**	03
CREDITS –3			

Course Learning Objectives: This course (18CS734) will enable students to:

- To study the concept of menus, windows, interfaces
- To study about business functions
- To study the characteristics and components of windows andthe various controls for the windows.
- To study about various problems in windows design with color, text, graphics a
- nd To study the testing methods

Module 1	**Contact Hours**
The User Interface-Introduction, Overview, The importance of user interface – Defining the user interface, The importance of Good design, Characteristics of graphical and web user interfaces, Principles of user interface design **Textbook 1: Ch. 1,2** **RBT: L1, L2**	08
Module 2	
The User Interface Design process- Obstacles, Usability, Human characteristics in Design, Human Interaction speeds, Business functions-Business definition and requirement analysis, Basic business functions, Design standards. **Textbook 1: Part-2** **RBT: L1, L2**	08
Module 3	
System menus and navigation schemes- Structures of menus, Functions of menus, Contents of menus, Formatting of menus, Phrasing the menu, Selecting menu choices, Navigating menus, Kinds of graphical menus. **Textbook 1: Part-2** **RBT: L1, L2**	08
Module 4	
Windows - Characteristics, Components of window, Window presentation styles, Types of window, Window management, Organizing window functions, Window operations, Web systems, Characteristics of device based controls. **Textbook 1: Part-2** **RBT: L1, L2**	08
Module 5	
Screen based controls- Operable control, Text control, Selection control, Custom control, Presentation control, Windows Tests-prototypes, kinds of tests. **Textbook 1: Part-2** **RBT: L1, L2**	08

Course Outcomes: The student will be able to :

- Design the User Interface, design, menu creation, windows creation and connection between menus and windows

Question Paper Pattern:

- The question paper will have ten questions.
- Each full Question consisting of 20 marks

- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Textbooks:

1. Wilbert O. Galitz, "The Essential Guide to User Interface Design", John Wiley & Sons, Second Edition 2002.

Reference Books:

1. Ben Sheiderman, "Design the User Interface", Pearson Education, 1998.
2. Alan Cooper, "The Essential of User Interface Design", Wiley- Dream Tech Ltd.,2002

K. S. SCHOOL OF ENGINEERING AND MANAGEMENT
BENGALURU-560109
TENTATIVE CALENDAR OF EVENTS: VII ODD SEMESTER (2023-2024)
SESSION: SEP 2023 TO JAN 2024

Week No.	Month	Day						Days	Activities
		Mon	Tue	Wed	Thu	Fri	Sat		
1	SEP	11*	12	13	14	15	16 HH	5	11*-Commencement of VII sem
2	SEP	18 H	19	20	21	22	23	5	18-Varasiddhi Vinayaka Vrata 23-Monday Time Table
3	SEP	25	26	27	28 H	29	30	5	28-Eid-Milad 30-Thursday Time Table
4	OCT	2 H	3	4	5	6	7 HH	4	2-Gandhi Jayanthi
5	OCT	9	10	11	12	13 TA	14 H	5	14- Mahalaya Amavasya
6	OCT	16 T1	17 T1	18 T1	19	20	21 HH	5	
7	OCT	23 H	24 H	25 BV	26 ASD	27 *FFB1	28	4	23-Mahanavami, Ayudhapooja 24- Vijayadasami 27-First Faculty Feed Back 28 - Monday Time Table
8	OCT NOV	30	31	1 H	2	3	4 HH	4	1-Kannada Rajyothsava
9	NOV	6	7	8	9	10	11	6	11-Wednesday Time Table
10	NOV	13	14 H	15	16	17 TA	18 HH	4	14-Balipadyami, Deepavali
11	NOV	20	21	22	23 T2	24 T2	25 T2	6	
12	NOV DEC	27	28 BV	29 ASD	30 H	1 *FFB2	2 HH	4	30- Kanakadasa Jayanti 1 - Second Faculty Feed Back
13	DEC	4	5	6	7	8	9	6	9- Tuesday Time Table
14	DEC	11	12	13	14	15	16 HH	5	
15	DEC	18	19	20	21	22	23 TA	6	23- Monday Time Table
16	DEC	25 H	26 T3	27 T3	28 T3	29 LT	30 LT	5	25- Christmas
17	JAN	1 LT	2 LT	3 LT	4	5	6 HH	5	6* - Last Working day

Total No of Working Days : 84

Total Number of working days (Excluding holidays and Tests)=70

H	Holiday
BV	Blue Book Verification
T1,T2,T3	Tests 1,2,3
ASD	Attendance & Sessional Days
HH	Declared Holiday
LT	Lab Test
TA	Test Attendance

Monday	13
Tuesday	13
Wednesday	14
Thursday	14
Friday	15
Total	70

Dr. K. RAMA NARASIMHA
Principal/Director
K S School of Engineering and Management
Bengaluru - 560 109

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU-560109
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
CLASS TIME TABLE
(w.e.f. 13/9/2023)

Class: VII CSE 'B' Lecture Hall: LH- 504 Class Teacher: Mrs. Supriya Surseh

DAY	8.40-9.35	9.35-10.30	10.30-10.45	10.45 -11.40	11.40-12.35	12.35-1.20	1.20 -2.10	2.10-3.00	3.00-3.50
MONDAY	(G3)PWP I Lab/ (G6)AIML Lab				CRGV (18CS744)	LUNCH BREAK	AI & ML (18CS71)	BDA (18CS72)	UID (18CS734)
TUESDAY	AI & ML (18CS71)	BDA (18CS72)	BTREAK	UID (18CS734)	E&E (18ME751)		(G4) PWP I Lab/(G1)AIML Lab		
WEDNESDAY	AI & ML (18CS71)	UID (18CS734)		BDA (18CS72)	E&E (18ME751)		(G6)PWP I Lab/(G3)AIML Lab		
THURSDAY	(G2) PWP I Lab/(G5)AIML Lab				E&E (18ME751)		CRGV (18CS744)	BDA (18CS72)	AI & ML (18CS71)
FRIDAY	(G1) PWP I Lab/ (G4)AIML Lab				CRGV (18CS744)		(G5) PWP I Lab/ (G2)AIML Lab		
SATURDAY	AS PER CALENDAR OF EVENTS								

CODE	SUBJECT	HOURS /WEEK	STAFF
18CS71	Artificial Intelligence and Machine Learning	4	Mrs.Nagaveni B Nimbal
18CS72	Big Data Analytics	4	Mrs.Supriya Suresh
18CS734	User Interface Design	3	Mrs. Meena G
18CS744	Cryptography	3	Mrs. Nita Meshram
18ME751	Energy and Environment	3	Mr. Parashuram
18CSL76	Artificial Intelligence and Machine Learning Laboratory	3	Mrs. Nagaveni B Nimbal Mrs.Belli T
18CSP77	Project Work Phase -1	3	Mrs.Supriya Suresh Mrs.Meena G

Time-table Coordinator

HOD
Head of the Department
Department of Computer Science & Engineering
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Bangalore-560109

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Principal
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Bengaluru - 560 109

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU-560109

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SESSION: 2023-2024(ODD SEMESTER)

(w. e. f 13-09-2023)

INDIVIDUAL TIME TABLE

Class: VII B & V B **Faculty Name: Mrs. Meena G**

DAY	8.40-9.35	9.35-10.30	10.30 -10.45	10.45 -11.40	11.40-12.35	12.35-1.20	1.20 -2.10	2.10-3.00	3.00-3.50
MONDAY	(G3)PWP I Lab				RMIP (V B)	LUNCH BREAK			UID (VII B)
TUESDAY	RMIP (V B)		TEA BREAK	UID (VII B)			(G4) PWP I Lab		
WEDNESDAY	UID (VII B)				RMIP (V B)		(G6)PWP I Lab		
THURSDAY	(G2) PWP I Lab			RMIP (V B)					
FRIDAY	(G1) PWP I Lab						(G5) PWP I Lab		
SATURDAY	AS PER CALENDAR OF EVENTS								

CODE	SUBJECT	Hours /Week	
18CS734	User Interface Design	3	Mrs. Meena G
21XX56	Research Methodology & Intellectual Property Rights	4	
18CSP77	Project Work Phase -1	9	

Time Table Coordinator

Head of the Department

HOD
Department of Computer Science Engineering
K.S School of Engineering & Management
Bangalore-560109

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K. S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU -560 019

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SESSION: 2023-2024 (ODD SEMESTER)

VII Semester - B Student List

Sl. No.	USN	Name of the Student
1	1KG20CS061	M ROHINI
2	1KG20CS062	M YASASWANI CHOWDARY
3	1KG20CS063	MEGHANA M
4	1KG20CS064	MOHAMMED YASEEN
5	1KG20CS065	MOHAMMED ZAYED PASHA
6	1KG20CS066	MONALI B PIPALIYA
7	1KG20CS067	MONISHA M
8	1KG20CS068	NAGENDRA B N
9	1KG20CS069	NANDAN KUMAR N
10	1KG20CS070	NANDINI M N
11	1KG20CS071	NANDINI V
12	1KG20CS072	NAVEEN V
13	1KG20CS073	NIKHIL K H
14	1KG20CS074	NISCHITHA M
15	1KG20CS075	NISHA M
16	1KG20CS076	NISHMITHA R
17	1KG20CS077	NITESH A
18	1KG20CS078	NITHYA A
19	1KG20CS079	NITHYA K
20	1KG20CS080	PRATHIPATI HARSHITHA
21	1KG20CS081	PRAJWAL GOWDA M
22	1KG20CS082	PRAJWAL R
23	1KG20CS083	PREETHAM N N
24	1KG20CS084	PRERANA KUMARI
25	1KG20CS085	PRITHVIRAJ SANJAY CHAVAN
26	1KG20CS086	RAHUL B M
27	1KG20CS087	RAJATH K
28	1KG20CS088	RAKSHITHA A
29	1KG20CS089	RAKSHITHA H C
30	1KG20CS090	RAKSHITHA R
31	1KG20CS091	RANJITH KUMAR G D
32	1KG20CS092	RANJITHAA M A
33	1KG20CS093	ROSHAN KUMAR L
34	1KG20CS094	S DINESH
35	1KG20CS095	SAGAR NAIDU N
36	1KG20CS096	SAHANA H S
37	1KG20CS097	SAHANA S HEGDE
38	1KG20CS098	SAMYUKTHA MADHAV B
39	1KG20CS099	SHREYA S
40	1KG20CS100	SHRUTHI M
41	1KG20CS101	SIDAPARA NANCY ARVINDKUMAR

42	1KG20CS102	SIDDHARTH GANESAN
43	1KG20CS103	SRI RAKSHA
44	1KG20CS104	SUCHITHA R
45	1KG20CS105	SUCHITHRA M B
46	1KG20CS106	SUJAY C L
47	1KG20CS107	SUMANTH G G
48	1KG20CS108	SWETHA M
49	1KG20CS109	THANUSHREE R
50	1KG20CS110	TRIPURANENI VYSHNAVI
51	1KG20CS111	V YASHWANTH NAIDU
52	1KG20CS112	VADIRAJ
53	1KG20CS113	VAISHNAVI N BHAT
54	1KG20CS114	VANDITHA
55	1KG20CS115	VAPALAPATI LAXMI PRIYA
56	1KG20CS116	VELURU BHANUPRASAD
57	1KG20CS117	VENKATESHA D J
58	1KG20CS118	VIBHA M
59	1KG20CS119	VIJAYALAKSHMI D
60	1KG20CS120	VIKRAMA C
61	1KG20CS121	VINAY A
62	1KG20CS122	VISHWANATH VIVEK M
63	1KG20CS123	YASHITHA T
64	1KG20CS124	YASHWANTH B
65	1KG17CS072	SANJANA URS D

KSSEM

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : **Mrs. Meena G**

SUBJECT CODE/TITLE : **18CS734 / User Interface Design**

SEMESTER/SEC/YEAR : **VII/B/2021**

ACADEMIC YEAR : **2023-2024**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Engaged Date
MODULE-1: The User Interface							11/9/23
1	Introduction	L+D	BB+LCD	1	1	11.09.2023	12/9/23
2	Overview of UID	L+D	BB+LCD	1	2	12.09.2023	19/9/23
3	The importance of user interface	L+D	BB+LCD	1	3	13.09.2023	23/9/23
4	The importance of user interface	L+D	BB+LCD	1	4	19.09.2023	25/9/23
5	Defining the user interface	L+D	BB+LCD	1	5	20.09.2023	26/9/23
6	The importance of good design	L+D	BB+LCD	1	6	23.09.2023	27/9/23
7	Characteristics of graphical and web user interfaces.	L+D	BB+LCD	1	7	25.09.2023	3/10/23
8	Principles of user interface Design	L+D	BB+LCD	1	8	26.09.2023	4/10/23
MODULE-2: The User Interface Design process							
9	Obstacles, Usability.	L+D	BB+LCD	1	9	27.09.2023	5/10/23
10	Human characteristics in Design	L+D	BB+LCD	1	10	03.10.2023	9/10/23
11	Human Interaction speeds	L+D	BB+LCD	1	11	04.10.2023	10/10/23
12	Business functions-Business definition and requirement analysis	L+D	BB+LCD	1	12	09.10.2023	12/10/23
13	Continuation of requirement analysis	L+D	BB+LCD	1	13	10.10.2023	12/10/23
14	Basic business functions	L+D	BB+LCD	1	14	11.10.2023	25/10/23

15	Design standards.	L+D	BB+LCD	1	15	25.10.2023	26/10/23
16	Continuation of Design standards.	L+D	BB+LCD	1	16	28.10.2023	28/10/23
MODULE-3:System menus and navigation schemes							
17	System menus and navigation schemes	L+D	BB+LCD	1	17	30.10.2023	6/11/23
18	Structures of menus	L+D	BB+LCD	1	19	31.10.2023	8/11/23
19	Functions of menus	L+D	BB+LCD	1	19	06.11.2023	9/11/23
20	Contents of menus	L+D	BB+LCD	1	20	07.11.2023	10/11/23
21	Formatting of menus	L+D	BB+LCD	1	21	08.11.2023	11/11/23
22	Phrasing the menu	L+D	BB+LCD	1	22	11.11.2023	18/11/23
23	Selecting menu choices	L+D	BB+LCD	1	23	13.11.2023	20/11/23
24	Navigating menus, Kinds of graphical menus.	L+D	BB+LCD	1	24	15.11.2023	20/11/23
MODULE-4: Windows							
25	Windows –Characteristics	L+D	BB+LCD	1	25	20.11.2023	21/11/23
26	Components of window	L+D	BB+LCD	1	26	21.11.2023	22/11/23
27	Window presentationstyles	L+D	BB+LCD	1	27	22.11.2023	27/11/23
28	Types of windows	L+D	BB+LCD	1	28	27.11.2023	28/11/23
29	Window management,	L+D	BB+LCD	1	29	28.11.2023	29/11/23
30	Organizing window functions,Window operations,	L+D	BB+LCD	1	30	29.11.2023	4/12/23
31	Web systems,	L+D	BB+LCD	1	31	04.12.2023	5/12/23
32	Characteristics of device-based controls.	L+D	BB+LCD	1	32	05.12.2023	6/12/23
MODULE- 5:Screen Based Control							
33	Screen based controls	L+D	BB+LCD	1	33	06.12.2023	9/12/23
34	Operable control	L+D	BB+LCD	1	34	09.12.2023	09/12/23
35	Text control	L+D	BB+LCD	1	35	11.12.2023	23/12/23
36	Selection control	L+D	BB+LCD	1	36	12.12.2023	23/12/23
37	Custom control	L+D	BB+LCD	1	37	13.12.2023	1/1/24
38	Presentation control	L+D	BB+LCD	1	38	18.12.2023	1/1/24
39	Windows Tests-prototypes	L+D	BB+LCD	1	39	19.12.2023	2/1/24
40	Kinds of tests.	L+D	BB+LCD	1	40	20.12.2023	2/1/24

41	Revision	L+D	BB+LCD	0	40	23.12.2023	3/1/24

Total No. of Lecture Hours = 40hrs.

Total No. of Revision Hours = 01hrs.

Total No. of Tutorial Hours= 00

Course in charge

Head of the Department

HOD
Department of Computer Science Engineering
K.S School of Engineering & Management
Bangalore-560109

Principal

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SESSION: 2023-2024(ODD SEMESTER)

QUESTION BANK -1

Subject: 18CS734 – USER INTERFACE DESIGN

Module 1

1. Define user interface. Explain the important benefits of a good design. Compare the characteristics of GUI versus web design.
2. Demonstrate the concept of direct and indirect manipulation for graphical systems.
3. Discuss the general principles of user interface design (any 10).
4. List and explain the characteristics of GUI.
5. List and explain the characteristics of web design

Module 2

6. Outline various factors of user interface design that needs to be considered by human interaction designers.
7. Explain the objective criteria for measuring usability.
8. Explain in detail the important human characteristics in user interface design (any 8).
9. Explain the techniques for determining the user requirements using indirect method.
10. Discuss the characteristics of intranet and internet and bring out the differences between them
11. Define object in a graphical system. Differentiate between application and data orientation.
12. List and explain the pitfalls in the development path of design process.
13. Explain few significant direct techniques for determining business requirements
14. "Human are complex organisms with a variety of attributes that have an important influence on interface and screen design ". Justify and explain.

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SESSION: 2023-2024(ODD SEMESTER)

QUESTION BANK -2

Subject: 18CS734 – USER INTERFACE DESIGN

Module 3

1. Explain the system training with an example.
2. Documentation design.
3. Types of determining business requirement techniques
4. Explain the guidelines for designing the conceptual model.
5. The requirement collection guidelines
6. Explain the general steps for business function.
7. Define Business function and explain the types of determine basic business function.
8. Three types of design support and Implementation.
9. Explain the functions of menus.
10. The advantages and disadvantages of menu bar.
11. The structure of menus with examples.
12. The various ways in which menu items can be selected.

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SESSION: 2022-2023(ODD SEMESTER)

QUESTION BANK -3

Subject: 18CS734 – USER INTERFACE DESIGN

Module 4:

1. **Explain** the general guidelines followed in designing window operations.
2. **Define** primary and secondary window .**Discuss** the characteristics of same.
3. How to organize window presentation style. **Draw** the styles and explain.
4. **Discuss** overlapping and tiled window presentation style.
5. **Explain** Window Organization. IMPROVEMENT
6. **Explain** any five Window Operations
7. **Explain** the characteristics and capabilities of following device-based controls
   a) Trackball
   b) Joystick
   c) Graphic tablet
   d) Touch screen
   e) Mouse

Module 5:

1. **Expalin** slider and tree view operable controls with advantages and disadvantages.
2. **Discuss** various types window test prototypes used in user interface design.
3. **Discuss** heuristic evaluation and cognitive walk through test conducted in user interface design.
4. **Explain** list box selection control
5. Briefly **explain** different kinds of test.
6. **Discuss** Single-Line and Multiple-Line Text Boxes
7. Explain Radio Buttons and Check Boxes in selection control
8. **Summarize** Static Text Field Guidelines
9. **Outline** Column Headings in presentation controls.

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO PO-Mapping

Course: USER INTERFACE DESIGN			
Type: Elective		**Course Code: 18CS734**	
No of Hours			
Theory (Lecture Class)	Practical/Field Work/Allied Activities	Total/Week	Total teaching hours
3	0	3	40
Marks			
Internal Assessment	Examination	Total	Credits
40	60	100	3

Aim/Objectives of the Course

1. To study the concept of menus, windows, interfaces.
2. To study about business functions.
3. To study the characteristics and components of windows and the various controls for the windows.
4. To study about various problems in window design with text, graphics.
5. To study the testing methods.

Course Learning Outcomes

After completing the course, the students will be able to

CO1	**Summarize** the importance of user interface, characteristics of graphical system, web user interface and its principles.	**Understanding (K2)**
CO2	**Demonstrate** user interface design process and **utilize** the business functions.	**Understanding (K2)**
CO3	**Explain** different types of system menu and navigation schemes.	**Understanding (K2)**
CO4	**Discuss** the different presentation styles, device based and screen- based controls in user interface design.	**Understanding (K2)**
CO5	**Outline** kinds of test, retest, and visualize various aspects of screen - based control.	**Understanding (K2)**

Syllabus Content

Module 1: The User Interface-Introduction, Overview, the importance of user interface - Defining the user interface, The importance of good design, Characteristics of graphical and web user interfaces, Principles of user interface design **LO:** At the end of this session the student will be able to 1. Explain the characteristics of GUI. 2. Compare and contrast GUI and web interface design. 3. Explain the general principles of UID.	**CO1** 8 hrs PO1-2 PO2-2 PO3-2 PO5 -3 PO6 -2 PO8 -1

4. Mention the advantages & disadvantages of GUI in detail.	PO9-1 PO10-1 PO12-1 PSO1-3 PSO2-2
Module 2: The User Interface Design process- Obstacles, Usability, Human characteristics in Design, Human Interaction speeds, Business functions-Business definition and requirement analysis, Basic business functions, Design standards. **LO**: At the end of this session the student will be able to 1. Explain the usefulness of user interface design process 2. Explain the challenges of user interface design process 3. Explain the human characteristics in design. 4. Explain the speed of human interaction. 5. Explain direct and indirect methods in requirement analysis.	**CO2** 8 hrs PO1-2 PO2-2 PO3-2 PO5 -3 PO6 -2 PO8 -1 PO9-1 PO10-1 PO12-1 PSO1-3 PSO2-2
Module 3 System menus and navigation schemes- Structures of menus, Functions of menus, Contents of menus, Formatting of menus, Phrasing the menu, selecting menu choices, Navigating menus, Kinds of graphical menus. **LO:** At the end of this session the student will be able to 1. Explain the guidelines for formatting menus. 2. Explain structure of menus. 3. Explain the content of menu. 4. What are the advantages of menu bar 5. Explain the kinds of graphical menus.	**CO3** 8 hrs PO1-2 PO2-2 PO3-2 PO5 -3 PO6 -2 PO8 -1 PO9-1 PO10-1 PO12-1 PSO1-3 PSO2-2
Module 4: Windows - Characteristics, Components of window, Window presentation styles, Types of windows, Window management, organizing window functions, Window operations, Web systems, Characteristics of device-based controls. **LO:** At the end of this session the student will be able to 1. Explain the types and components of windows. 2. Give short notes on windows presentation styles. 3. Explain various window management techniques. 4. Explain briefly about various device-based controls.	**CO4** 8 hrs PO1-2 PO2-2 PO3-2 PO5 -3 PO6 -2 PO8 -1 PO9-1 PO10-1 PO12-1 PSO1-3 PSO2-2

Module 5: Screen based controls- Operable control, Text control, Selection control, Custom control, Presentation control, Windows Tests-prototypes, kinds of tests. **LO:** At the end of this session the student will be able to 1. Discuss about screen-based selection controls. 2. Explain different tests and retest on windows layout. 3. Explain the prototypes of test that can done in UID.	**CO5** 8 hrs PO1-2 PO2-2 PO3-2 PO5 -3 PO6 -2 PO8 -1 PO9-1 PO10-1 PO12-1 PSO1-3 PSO2-2

Text Books

1. Wilbert O. Galitz, "The Essential Guide to User Interface Design", John Wiley & Sons, Second Edition 2002.

Reference Books (specify minimum two foreign authors text books)

1. Ben Sheiderman, "Design the User Interface", Pearson Education, 1998.
2. Alan Cooper," The Essential of User Interface Design", Wiley- Dream Tech Ltd.,2002

Useful Websites

1. https://www.usability.gov/what-and-why/user-interface-design.html
2. https://careerfoundry.com/en/blog/ui-design/what-is-ui-design-guide/
3. https://pidoco.com/en/help/ux/user-interface-design
4. https://www.coursera.org/specializations/user-interface-design

Useful Journals

1. https://www.ripublication.com/ijaer17/ijaerv12n20_96.pdf
2. https://www.tandfonline.com/doi/abs/10.1207/s15327051hci0104_2

Teaching and Learning Methods

1. Lecture class: 40 hrs
2. Revision classes: 01hrs

Assessment

Type of test/examination: Written examination

Continuous Internal Evaluation(CIE) : 40 marks (Average of three tests will be considered)

Semester End Exam(SEE): 100 marks (students have to answer all main questions) which will be reduced to 60 Marks.

Test duration: 1 :30 hrs

Examination duration: 3 hrs

CO to PO Mapping

PO1: Science and engineering Knowledge **PO2:** Problem Analysis **PO3:** Design & Development **PO4:**Investigations of Complex Problems **PO5:** Modern Tool Usage **PO6:** Engineer & Society	**PO7:**Environment and Society **PO8:**Ethics **PO9:**Individual & Team Work **PO10:** Communication **PO11:**Project Management & Finance **PO12:**Lifelong Learning

PSO1: Understand fundamental and advanced concepts in the core areas of Computer Science and Engineering to analyze, design and implement the solutions for the real-world problems.

PSO2: Utilize modern technological innovations efficiently in various applications to work towards the betterment of society and solve engineering problems.

CO	PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
18CS734	K-level														
CO1	K2	2	2	2	-	3	2	-	1	1	1	-	1	3	2
CO2	K2	2	2	2	-	3	2	-	1	1	1	-	1	3	2
CO3	K2	2	2	2	-	3	2	-	1	1	1	-	1	3	2
CO4	K2	2	2	2	-	3	2	-	1	1	1	-	1	3	2
CO5	K2	2	2	2	-	3	2	-	1	1	1	-	1	3	2

Course In charge

Head of the Department

HOD
Department of Computer Science Engineering
K.S School of Engineering & Management
Bangalore-560109

Principal

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SESSION: 2023-2024(ODD SEMESTER)

ASSIGNMENT-1

Batch	2020
Year/Semester/Section	IV/VII/A&B
Course Code-Title	18CS734 –USER INTERFACE DESIGN
Name of the Course In charge	Mrs.AMITHA S & Mrs.Meena G

Total marks:15
Date of Issue: 09-10-2023 **Date of Submission:15-10-2023**

Sl. No.	Assignment Questions	K Level	CO	Marks
1.	**a. Define** User Interface Design. **Explain** the importance of good design. **b. Compare** the characteristics of GUI verses Web design	**Understanding K2**	**CO1**	**2**
2.	**Outline** the advantages and disadvantages of graphical system.	**Understanding K2**	**CO1**	**2**
3.	**a. Compare** Printed Pages Vs Web pages. **b. Summarize** the interaction styles.	**Understanding K2**	**CO1**	**2**
4.	**Discuss** the principles of user interface design process.	**Understanding K2**	**CO1**	**2**
5.	**Differentiate** the concept of indirect manipulation and Direct manipulation.	**Understanding K2**	**CO1**	**2**
6.	**Explain** the five commandments to eliminate the pitfalls in designing the interface.	**Understanding K2**	**CO2**	1
7.	**Write a note** about human interaction speeds.	**Understanding K2**	**CO2**	1
8.	**Discuss** in detail the important human characteristics in user interface design.	**Understanding K2**	**CO2**	1
9.	**Interpret** techniques for determining user requirements using direct method.	**Understanding K2**	**CO2**	1
10.	**Discuss** the guidelines for designing conceptual model.	**Understanding K2**	**CO2**	1

Course In charge 9/10/23

Head of the Department

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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SESSION: 2023-2024(ODD SEMESTER)

ASSIGNMENT-2

Batch	2020
Year/Semester/Section	IV/VII/A&B
Course Code-Title	18CS734 –USER INTERFACE DESIGN
Name of the Course In charge	Mrs.AMITHA S & Mrs.MEENA G

Date of Issue: 15-11-2023 **Date of Submission:20-11-2022** **Total marks:15**

Sl. No.	Assignment Questions	K Level	CO	Marks
1.	**Explain** the followings (a) Document design (b) System training (c) Documentation needs	**Understanding K2**	**CO2**	**1**
2.	**Outline** guidelines that must be followed during detailed interface design that are valuable to user and developers.	**Understanding K2**	**CO2**	**1**
3.	**Write a note** on Visually Pleasing Composition.	**Understanding K2**	**CO2**	**1**
4.	a. **Outline** the guidelines for designing conceptual models. b. **Explain** factors make people difficult to use the computer?	**Understanding K2**	**CO2**	**1**
5.	**Discuss** design standards Or style guides.	**Understanding K2**	**CO2**	**1**
6.	a. **Explain** the structure of menu. b. **Discuss** elements of menu content.	**Understanding K2**	**CO3**	2
7.	a. **Explain** the various ways in which menu items can be selected. b. **List** and **explain** the functions of menu bar.	**Understanding K2**	**CO3**	2
8.	a. **Outline** guidelines for formatting menus. b. **List** and **explain** navigational goals of a well-defined navigational system.	**Understanding K2**	**CO3**	2
9.	a. **Discuss** the components of web navigation system. b. **List** all kinds of graphical menu and **explain** in details.	**Understanding K2**	**CO3**	2
10.	a. **Illustrate** about the web navigation problems. b. **Discuss** general link guidelines.	**Understanding K2**	**CO3**	2

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SESSION: 2023-2024(ODD SEMESTER)

ASSIGNMENT-3

Batch	2020
Year/Semester/Section	IV/VII/A&B
Course Code-Title	18CS734 –USER INTERFACE DESIGN
Name of the Course In charge	Mrs.AMITHA S & Mrs.MEENA G

m

ASSIGNMENT-3 **Date of Submission:26-12-2022**
Date of Issue: 19-12-2023 **Total marks:20**

Sl. No.	Assignment Questions	K Level	CO	Marks
1.	**a. List** the Components of a window and explain its importance. b. **Discuss** the characteristics of Window.	**Understanding K2**	**CO4**	**2**
2.	**Explain** different window management schemes.	**Understanding K2**	**CO4**	**2**
3.	a. **Discuss** the advantage s and disadvantage of Fames in web system. b. **Illustrate** the window Presentation Style.	**Understanding K2**	**CO4**	**2**
4.	**Outline** the functions of organizing window.	**Understanding K2**	**CO4**	**2**
5.	**c. Write a note** on all the device based controls. b. **Discuss** the guideline for selecting proper device base control.	**Understanding K2**	**CO4**	**2**
6.	**a. Summarize** any five Selection Controls. **b.Explain** the following i)Toolbars ii) Command buttons.	**Understanding K2**	**CO5**	2
7.	a.**List** and **explain** any 3 presentation control. b. **Write a note** on the following text based control i). Text box ii). Caption	**Understanding K2**	**CO5**	2
8.	**Write a note** on the following i). selecting the proper controls ii)Other operable controls.	**Understanding K2**	**CO5**	2
9.	**a. Explain** the kinds of Tests in detail. b. **Define** operable control. **Explain** the usage of buttons and its advantages and disadvantages.	**Understanding K2**	**CO5**	2
10.	a. **Write a note** on think-aloud-Evaluation and Usability Test. b. **Summarize** the purpose of prototypes. **Discuss** any two kinds of prototypes with their importance to the system developers.	**Understanding K2**	**CO5**	2

14/12/23

Course In charge

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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
I SESSIONAL TEST QUESTION PAPER
SET-A

USN										

Degree : **B.E**
Branch : **Computer Science and Engineering**
Course Title : **User Interface Design**
Duration : **90 Minutes**

Semester : **VII A&B**
Course Code : **18CS734**
Date : **17/10/2023**
Max Marks : **30**

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**Define** User Interface Design. **Outline** the important benefits of a good design.	5	Understanding K2	CO1
(b)	**Discuss** the principles of user interface design process (Any 5)	5	Understanding K2	CO1
(c)	**Summarize** the five commandments to eliminate the pitfalls in designing the interface.	5	Understanding K2	CO2
	OR			
2(a)	**Explain** the advantages of graphical system.	5	Understanding K2	CO1
(b)	**Summarize** the concept of Direct manipulation.	5	Understanding K2	CO1
(c)	**Interpret** the common usability problem in web-based system.	5	Understanding K2	CO2
	PART-B			
3(a)	**List** and **explain** the characteristics of GUI.	5	Understanding K2	CO1
(b)	**Write a note on** Web Pages vs Printed Pages.	5	Understanding K2	CO1
(c)	**Summarize** briefly about human interaction speeds.	5	Understanding K2	CO2
	OR			
4(a)	**Define** Usability. **Explain** the objective criteria for measuring usability.	5	Understanding K2	CO1
(b)	**Illustrate** the concept of indirect manipulation.	5	Understanding K2	CO1
(c)	**Explain** in detail the important human characteristics in user interface design.	5	Understanding K2	CO2

Course Incharge **HOD CSE** **IQAC- Coordinator** **Principal**

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Dr. K. RAMA NARASIMHA
Principal/Director
K S School of Engineering and Management
Bengaluru - 560 109

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
II SESSIONAL TEST QUESTION PAPER
SET-A

USN										

Degree	:	**B.E**	**Semester** :	**VII A&B**
Branch	:	**Computer Science and Engineering**	**Course Code** :	**18CS734**
Course Title	:	**User Interface Design**	**Date** :	**24/11/2023**
Duration	:	**90 Minutes**	**Max Marks** :	**30**

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**Summarize** the system training with an example.	5	Understanding K2	CO2
(b)	**Explain** any 5 guidelines for formatting menus.	5	Understanding K2	CO3
(c)	**List** and **illustrate** the functions of menu bar.	5	Understanding K2	CO3
	OR			
2(a)	**List** the 2 types of determining business requirement techniques and **summarize** any one in brief.	5	Understanding K2	CO2
(b)	**Outline** the advantages and disadvantages of menu bar?	5	Understanding K2	CO3
(c)	**List** and **explain** navigational goals of a well-defined navigational system.	5	Understanding K2	CO3
	PART-B			
3(a)	**Explain** the guidelines for designing the conceptual model.	5	Understanding K2	CO2
(b)	**Summarize** hierarchical menus and connected menus.	5	Understanding K2	CO3
(c)	**Discuss** the various ways in which menu items can be selected.	5	Understanding K2	CO3
	OR			
4(a)	**Discuss** the requirement collection guidelines.	5	Understanding K2	CO2
(b)	**Outline** all kinds of graphical menus and **explain** any 3 in detail.	5	Understanding K2	CO3
(c)	**Write a note** on popup menu.	5	Understanding K2	CO3

Course Incharge **HOD CSE** **IQAC- Coordinator** **Principal**

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
III SESSIONAL TEST QUESTION PAPER
SET-A

USN										

Degree : B.E
Branch : Computer Science and Engineering
Course Title : User Interface Design
Duration : 90 Minutes

Semester : VII A&B
Course Code : 18CS734
Date : 27/12/2023
Max Marks : 30

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**List** and **explain** the Components of a window.	5	Understanding K2	CO4
(b)	**Write a note** on Device based control.	5	Understanding K2	CO4
(c)	**Summarize** any five Selection Controls.	5	Understanding K2	CO5
	OR			
2(a)	**Discuss** the advantage s and disadvantage of Fames in web system.	5	Understanding K2	CO4
(b)	**List** different window management schemes and **explain** any one in detail.	5	Understanding K2	CO4
(c)	**List** and **explain** any 3 presentation control.	5	Understanding K2	CO5
	PART-B			
3(a)	**Illustrate** the window Presentation Style.	5	Understanding K2	CO4
(b)	**Summarize** the different types of window with an example.	5	Understanding K2	CO4
(c)	**Define** operable control. **Explain** the usage of buttons and its advantages and disadvantages.	5	Understanding K2	CO5
	OR			
4(a)	**Illustrate** the characteristics and capabilities of following device-based controls i)Graphic tablet ii)Touch screen	5	Understanding K2	CO4
(b)	**List** and **eexplain** any 4 Window Operations.	5	Understanding K2	CO4
(c)	**Discuss** any two kinds of prototypes with its importance to the system developers.	5	Understanding K2	CO5

Course Incharge | HOD CSE | IQAC- Coordinator | Principal

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Bangalore-560 062

CBCS SCHEME

USN | 1 | R | G | 2 | 0 | C | S | 1 | 0 | 9 |

18CS734

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024
User Interface Design

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Define GUI. Write the difference between GUI and webpage design. **(10 Marks)**

b. Define user interface Design with example. Explain the importance and benefits of Good user Interface Design. **(10 Marks)**

OR

2 a. Discuss the general principles of UID. **(10 Marks)**

b. Mention the advantages and disadvantages of GUI in details. **(10 Marks)**

Module-2

3 a. What is requirement analysis? What are the methods involved in it? What is the impact of it on UI design? **(10 Marks)**

b. Define obstacles and pitfalls mention the general observation of design and common pitfalls and also explain five commandments used in Designing. **(10 Marks)**

OR

4 a. Explain the importance of human consideration in UI design with suitable example. **(10 Marks)**

b. Explain briefly about human interaction speed. **(10 Marks)**

Module-3

5 a. Explain in brief the structure of Menu's. **(10 Marks)**

b. Describe the components of a web navigation system with illustration. **(10 Marks)**

OR

6 a. Write a note on Graphical menus for the following

i) Pull down menu

ii) Pop up menu **(10 Marks)**

b. Describe at least four guidelines to be followed in phasing of menu, during the development of system menus. **(10 Marks)**

Module-4

7 a. Discuss briefly about the types of windows with example. (Any five) **(10 Marks)**

b. Write a note on the following

i) Track ball

ii) Joystick **(10 Marks)**

OR

8 a. Explain briefly about window management. **(10 Marks)**

b. Write a note on components of a windows. **(10 Marks)**

Module-5

9 a. Explain briefly the following selection control
   i) Radio buttons
   ii) Checkboxes **(10 Marks)**

b. Explain the purpose of prototypes. Discuss any two kinds of prototypes with their importance to the system developers. **(10 Marks)**

OR

10 a. Explain the following with respect to kinds of Tests.
   i) Think – Aloud Evaluation
   ii) Usability Test **(10 Marks)**

b. Explain the types of presentation control. **(10 Marks)**

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CBCS SCHEME

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18CS734

Seventh Semester B.E. Degree Examination, July/August 2022
User Interface Design

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define User Interface. Describe a good design benefits. **(06 Marks)**
b. List and discuss any ten advantages of graphical system. **(10 Marks)**
c. Explain the concept of direct manipulation for graphical system. **(04 Marks)**

OR

2 a. List and discuss the characteristics of graphical user interface in detail. **(10 Marks)**
b. Discuss the general principles of User Interface Design. **(10 Marks)**

Module-2

3 a. Briefly explain the five commandments to eliminate the pitfalls in designing the user interface. **(10 Marks)**
b. Describe any five important human characteristics in a user interface design. **(10 Marks)**

OR

4 a. Briefly explain a different human interaction speeds. **(06 Marks)**
b. List and explain the psychological characteristics of human consideration in design. **(04 Marks)**
c. Explain the different business requirements analysis techniques using direct methods. **(10 Marks)**

Module-3

5 a. Explain the structure of menus briefly. **(10 Marks)**
b. List and explain the content of menus in detail. **(10 Marks)**

OR

6 a. Describe the function of menus. **(05 Marks)**
b. Draw the menus bar with default functions and explain. **(05 Marks)**
c. Draw the structure of pull-down menu and explain with its parameters. **(10 Marks)**

Module-4

7 a. List and explain the components of a window. **(10 Marks)**
b. How to organize window presentation styles? Draw the styles and explain. **(10 Marks)**

OR

8 a. Define primary windows and secondary windows. Discuss the different characteristics of primary and secondary windows. **(10 Marks)**
b. Discuss the various types of device based controls for inputs. **(10 Marks)**

Module-5

9 a. Explain the following text based controls:
i) Text-box ii) Captions. (10 Marks)
b. Explain the Radio Buttons and list Box selection controls. (10 Marks)

OR

10 a. Discuss the various types windows test prototypes used in user interface design. (10 Marks)
b. Explain Heuristic evaluation and cognitive walk-through tests conducted in user interface design. (10 Marks)

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CBCS SCHEME

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17CS832

Eighth Semester B.E. Degree Examination, July/August 2021
User Interface Design

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions.*

1 a. Define User Interface Design. Explain the importance and benefits of a good design. **(08 Marks)**

b. Discuss Direct and Indirect Manipulation. **(06 Marks)**

c. List the advantages and disadvantages of graphical system. **(06 Marks)**

2 a. Explain the general principles of user interface design. **(08 Marks)**

b. Explain the characteristics of graphical user interface. **(06 Marks)**

c. Differentiate the characteristics of intranet and internet. **(06 Marks)**

3 a. Write a note on guidelines that must be followed during Interface design that are valuable for user. **(08 Marks)**

b. Explain the five commandments in designing for people. **(06 Marks)**

c. Write short notes on Human Interaction speed. **(06 Marks)**

4 a. Discuss with suitable examples the human characteristics on design. **(10 Marks)**

b. Discuss the models for determining basic business function. **(10 Marks)**

5 a. Explain the structures of Menus in detail. **(10 Marks)**

b. Discuss Website Navigation in detail. **(10 Marks)**

6 a. Explain functions of menus. **(08 Marks)**

b. Explain any four graphical menus in detail. **(06 Marks)**

c. Write notes on :

(i) Formatting of menus. (ii) Phrasing the menus. **(06 Marks)**

7 a. Discuss windows presentation styles. **(10 Marks)**

b. List the components of windows and explain its importance. **(10 Marks)**

8 a. Write the characteristics of Touch screen and keyboard. **(08 Marks)**

b. Discuss the process to select proper interaction devices. **(06 Marks)**

c. Compare different GUI controls. **(06 Marks)**

9 a. Write notes on different prototypes used in User Interface Design. **(08 Marks)**

b. Discuss presentation controls in detail. **(06 Marks)**

c. Write notes on:

(i) Think –Aloud Evaluation.

(ii) Cognitive Walk – Throughs. **(06 Marks)**

10 a. What is the need of usability test? Explain the process involved in developing and conducting a test. **(10 Marks)**

b. Write notes on:

(i) Slider (ii) Tree-view (iii) Tabs (iv) Scroll bars. **(10 Marks)**

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INTERNET OF THINGS TECHNOLOGY (18CS81)
MODULE 5

1. Write a note on DS18B20 temperature sensor.

Answer:

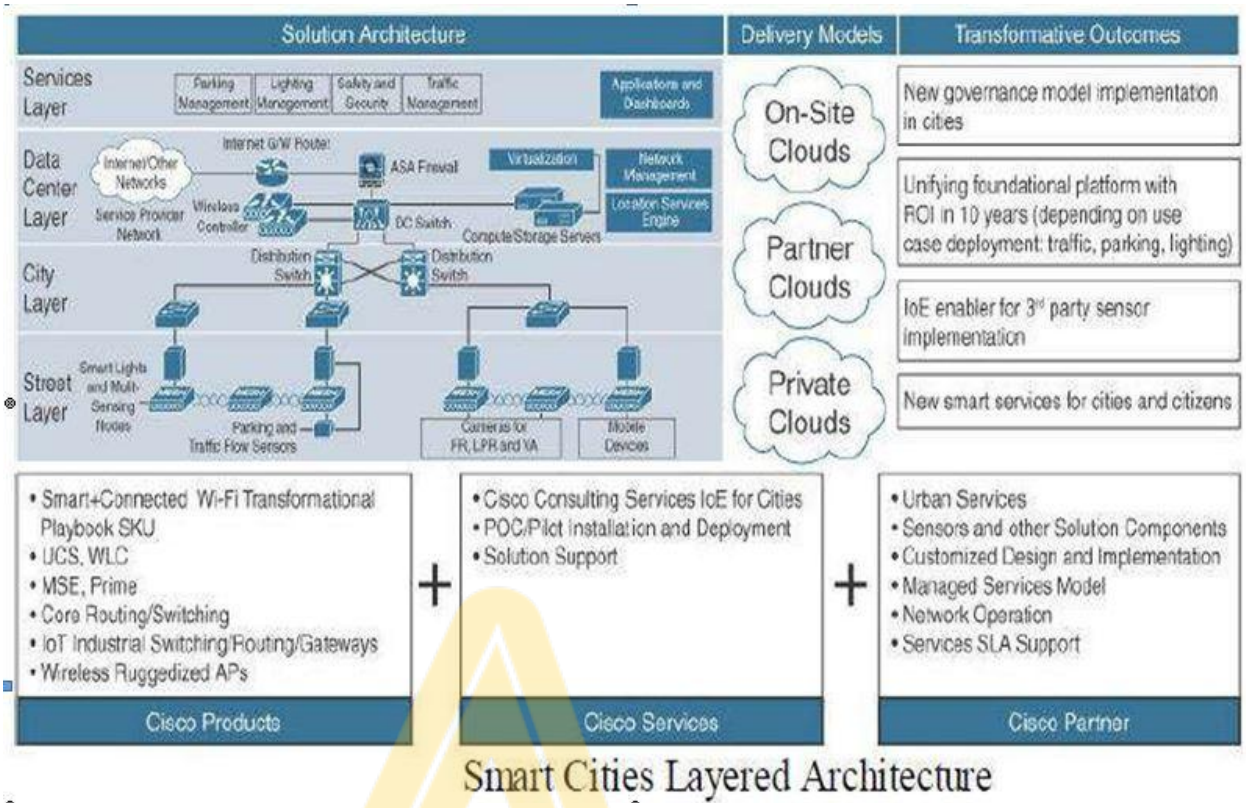
- The DS18B20 is a 1-wire programmable Temperature sensor from maxim integrated. It is widely used to measure temperature in hard environments like in chemical solutions, mines or soil etc.
- It can measure a wide range of temperature from-55°C to +125°with a decent accuracy of±5°C.
- Each sensor has a unique address and requires only one pin of the MCU to transfer data so it a very good choice for measuring temperature at multiple points without compromising much of your digital pins on the microcontroller.
- Applications of DB18B20 are
    - Measuring temperature at hard environments.
    - Liquid temperature measurement.
    - Applications where temperature has to be measured at multiple points.
- Pin Configuration:

PinName	Description
Ground	Connect to the ground of the circuit
Vcc	Powers the Sensor, can be3.3V or 5V
Data	This pin gives output the temperature value which can be read using 1-wire method

2. With a neat diagram, explain a four layered architecture of a smart city IoT Infrastructure.

Answer:

- A smart city IoT infrastructure is a four-layered architecture.
- Data flows from devices at the street layer to the city network layer and connect to the data center layer, where the data is aggregated, normalized, and virtualized .
- The data center layer provides information to the services layer, which consists of the applications that provide services to the city.
- In smart cities, multiple services may use IoTsolutions for many different purposes. These services may use different IoTsolutions, with different protocols and different application languages.



Smart Cities Layered Architecture

- Street Layer:
  - The street layer is composed of devices and sensors that collect data and take action based on instructions from the overall solution, as well as the networking components needed to aggregate and collect data.
  - A sensor is a data source that generates data required to understand the physical world. Sensor devices are able to detect and measure events in the physical world.
  - ICT connectivity solutions rely on sensors to collect the data from the world around them so that it can be analyzed and used to operationalise use cases for cities.
- City Layer:
  - At the city layer, which is above the street layer, network routers and switches must be deployed to match the size of city data that needs to be transported.
  - This layer aggregates all data collected by sensors and the end-node network into a single transport network.
  - The city layer may appear to be a simple transport layer between the edge devices and the data center or the Internet.
  - In this model, at least two paths exist from any aggregation switch to the data center layer. A common protocol used to ensure this resiliency is Resilient Ethernet Protocol (REP).
- Data Center Layer:
  - Data collected from the sensors is sent to a data center, where it can be processed and correlated.

- Based on this processing of data, meaningful information and trends can be derived, and information can be provided back.
- The cloud model is the chief means of delivering storage, virtualization, adaptability, and the analytics know-how that city governments require for the technological mashup and synergy of information embodied in a smart city.
- The cloud enables data analytics to be taken to server farms with large and extensible processing capabilities.

- Service Layer
  - The true value of ICT connectivity comes from the services that the measured data can provide to different users operating within a city.
  - Smart city applications can provide value to and visibility for a variety of user types, including city operators, citizens, and law enforcement.
  - The collected data should be visualized according to the specific needs of each consumer of that data and the particular user experience requirements and individual use cases.

3. Write a note on Smart City Security Architecture.

Answer:

- A serious concern of most smart cities and their citizens is data security**.**
- Vast quantities of sensitive information are being shared at all times in a layered, real-time architecture, and cities have a duty to protect their citizens' data from unauthorized access, collection, and tampering.
- Security protocols should authenticate the various components and protect data transport throughout.
- The street level, sensors should have their own security protocols.
- Common element for security on network layer are
  - Firewall
  - VLAN(Virtual Local Area Network)
  - Encryption

MODULE - 5

IOT physical Devices and Endpoints - Arduino UNO

Introduction to Arduino

Arduino is an open-source advancement prototying platform which depends on simple to-utilize equipment and programming.

Arduino can read inputs - such as detecting the power of light, events triggered by a button or a twitter message and can respond into a yield.

The Arduino is a small computer that you can program to read information from the world around you and to send commands to the outside world.

- Arduino is a tiny computer that you can connect to electrical circuits. This makes it easy to read inputs - and control outputs - send a command to the outside.

Why Arduino ?

Arduino is an open source product, software/hardware which is accessible and flexible to customers.

Arduino is flexible because of offering variety of digital and analog pins, SPI and PWM outputs.

Arduino is easy to use, connected to computer via a USB and communicates using serial protocol.

Arduino has growing online community where lots of source code is available for use.

Arduino is Cross-platform, which can work on Windows, Mac or Linux platforms.

Arduino follows simple, clear programming environment as C language.

Which Arduino ?

There are hundreds of "Arduino boards" available in the market serving every kind of purpose. Among all we almost focus on popular Arduino UNO which is used in almost 99% of projects use.

→ Some of the Boards from Arduino family are given below

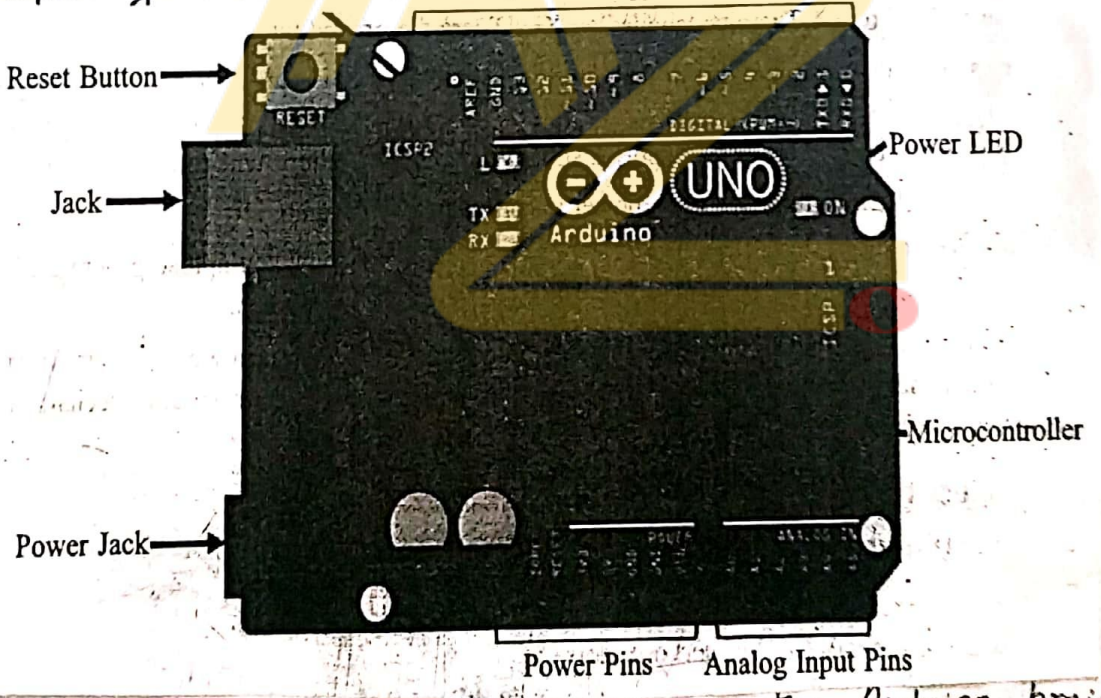
Arduino Mega is a big sister to the UNO with more memory and pins with a different chip the ATmega2560.

Flora is an Arduino compatible from Adafruit which is a round wearable which can be sewed into clothing.

The Arduino MKR1000 is a little like an Arduino Micro but has a more powerful 32-bit ATSAM ARM chip and built-in Wifi.

Arduino Micro is bit smaller with a chip Atmega 32u4 that can act like a keyboard or mouse.

Exploring Arduino UNO Learning Board



* Microcontroller : The ATmega328p is the Arduino brain. Everything on the Arduino board is meant to support this microcontroller.
* Digital pins : Arduino has 14 digital pins, labeled from 0 to 13 that can act as inputs or outputs.

* PWM pins : These are digital pins marked with a ~ (pins 11, 10, 9, 6, 5 and 3). PWM stands for "pulse width modulation" and allows to make digital pins output "fake" varying amounts of voltage.
* TX and RX pins : digital pins 0 and 1. The T stands for "transmit" and the R for "receive".
* LED attached to digital pin 13 : This is useful for an easy debugging of the Arduino sketches.
* Analog pins : The analog pins are labeled from A0 to A5 and are most often used to read analog sensors.
* Power pins : The Aurdino has 3.3V or 5V supply, which is really useful since most components require 3.3V or 5V.
* Reset button : When you press that button, the program that is currently being run in your Arduino will start from the beginning.
* Power ON LED : will be on since power is applied to the Arduino.
* USB jack : Connecting a male USB A to male USB B cable is how you upload programs from your computer to your Arduino board.
* Power jack : The power jack is where you connect a component to power up your Arduino.

Things that Arduino can do

Motion Sensor : It allows you detect movement

Light Sensor : this allows you to "measure" the quantity of light in the outside world.

Humidity and temperature Sensor : this is used to measure the humidity and temperature.

Ultrasonic Sensor : this Sensor allows to determine the distance to an object through Sonar.

Installing the Software (ARDUINO IDE)

The Arduino IDE (Integrated Development Environment) is where you develop your programs that will tell your Arduino what to do.

To download your Arduino IDE, browse on the following link https://www.arduino.cc/en/Main/Software.

Select which Operating System you're using and download it.

Fundamentals of Arduino Programming

1) Structure

The structure of Arduino programming contains of two parts as shown below

```
void setup()
{
  Statement(s);
}
void loop()
{
  Statement();
}
```

2)
```
void setup()
  void loop()
  {
    digitalWrite(pin, HIGH);
    delay(10000);
    digitalWrite(pin, LOW);
    delay(10000);
  }
```

3) Functions

A function is a piece of code that has a name and set of statements executed when function is called.

Functions are declared by its type followed with name of a function.

Syntax : type functionName (parameters)
{
Statement(s);
}

4) { } Curly braces

They define beginning and end of function.

5) Semicolon

It is used to end a statement and separate elements of a program.

Syntax : int x=14;

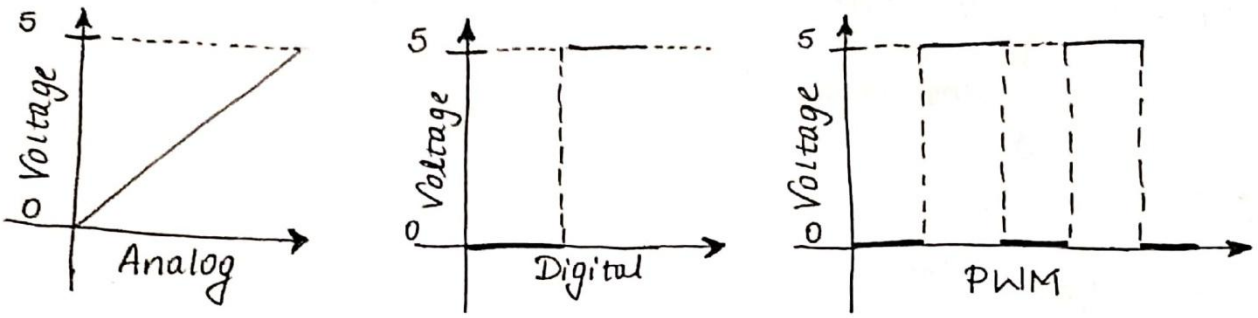
Differences between Analog, Digital and PWM Pins

In analog pins, you have unlimited possible states between 0 and 1023, This allows you to read sensor values For example, with a light sensor, if it is very dark, you'll read 1023, if it is very bright you'll read 0 If there is a brightness between dark and very bright you'll read a value between 0 and 1023.

In digital pins, you have just two possible states, which are on or off. These can also be referred as High or Low, 1 or 0 and 5V or 0V. For example, if an LED is on, then, its state is high or 1 or 5V. If it is off, you'll have Low, or 0 or 0V.

PWM pins are digital pins, so they output either 0 or 5V. However these pins can output "fake" intermedia voltage values between 0 and 5V, because they can perform "Pulse Width Modulation" (PWM). PWM allows to "simulate" varying levels of power by oscillating the output voltage of the Arduino.

The below figure shows the representation of Analog, Digital and PWM pins of Arduino.



IOT Physical Devices and Endpoints : RaspberryPi

Introduction to RaspberryPi

The RaspberryPi is a series of credit card sized single-board computers developed in the United Kingdom by Raspberrypi Foundation to promote the teaching of basic computer science in School and developing Countries.

The original model became far more popular than anticipated, selling outside its target market for uses such as robotics. It does not include peripherals and cases. However, some accessories have been included in several official and unofficial bundles.

The Organisation behind the Raspberry Pi consists of two arms. The first two models were developed by the Raspberry Pi Foundation. After the Pi Model B was released, the Foundation setup Raspberry Pi Trading, with Eben Upton as CEO, to develop the third model the B+.

"Why Raspberry Pi?" - Inexpensive, Cross-platform, Simple, clear programming environment, Open Source and extensible Software and Open Source and extensible hardware.

Exploring The Raspberrypi Learning Board

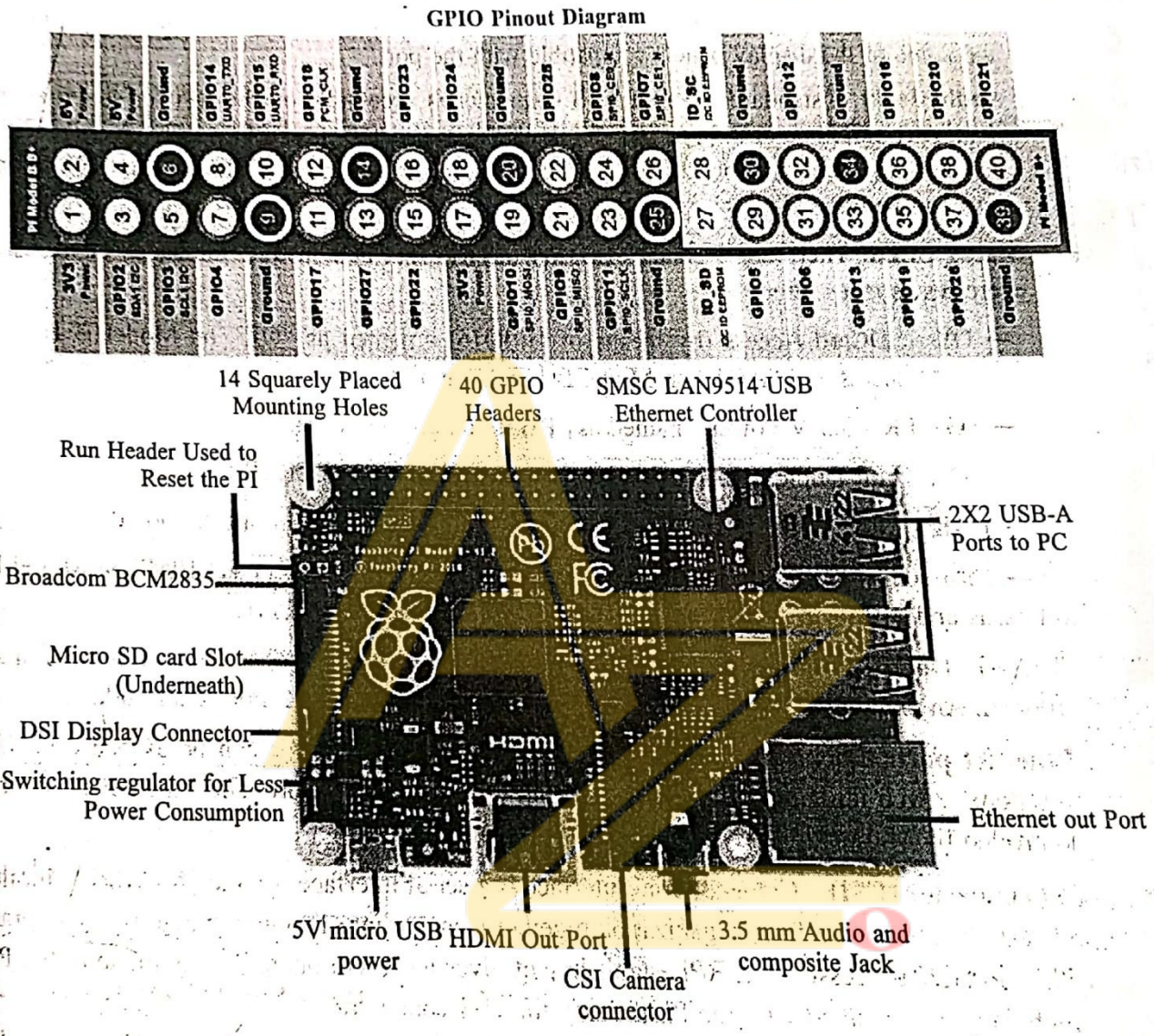


Figure 8-1: Raspberry Pi2 Model B and its GPIO

Processor : The Broadcom BCM2835 SoC used in the first generation Raspberrypi is somewhat equivalent to the chip used in first generation smart phones, which includes a 700 MHz ARM 1176JZF-S processor, Video Core IV graphics processing Unit (GPU) and RAM. This has a level 1 cache of 16KB and a level 2 cache of 128KB.

Power Source : The recommended and easiest way to power the Raspberrypi is Via the Micro USB port on the side of the unit.

SD Card : The Raspberry Pi does not have any locally available storage accessible. The working framework is stacked on a SD card which is embedded on the SD card space on the Raspberry Pi.

GPIO (General Purpose Input Output) : GPIO is a non specific pins on a coordinated circuit to know is an input or output pin which can be controlled by the client at run time. GPIO pins have no exceptional reason characterized, and go unused as a matter of course.

DSI Display X : The Raspberrypi Connector S2 is a display Serial interface (DSI) for connecting a liquid crystal display (LCD) panel using a 15-pin ribbon cable.

Audio Jack : A standard 3.5mm TRS connector is accessible on the RPi for stereo sound yield. Any earphone or 3.5mm sound link can be associated straightforwardly.

Ethernet Port : It is accessible on Model B and B+. It can be associated with a System or web utilizing a standard LAN link on the Ethernet port.

CSI connector(CSI) : Camera Serial Interface is a Serial interface outlined by MIPI (Mobile Industry Processor Interface) organization together went for interfacing computerized cameras with a portable Processor.

JTAG headers : JTAG is an acronym for 'Join Test Action Group', an association that began back in the mid 1980's to address test point get to issues on PCB with Surface mount gadgets.

Description of System on Chip (SoC)

A System on a chip (SoC) is an integrated circuit (IC) that co-ordinates all parts of a PC or other electronic framework into a solitary chip.

It might contained advanced, simple, blended flag, and regularly radio-recurrence works - all on a solitary chip substrate. SoCs are exceptionally regular in the portable gadgets advertise in view of their low power utilization. A run of the mill application is in the range of implanted frameworks.

An SoC comprises of:

* A microcontroller, chip or DSP core(s). Some SoCs - called multiprocessor framework on chip (MPSoC) - incorporate more than one processor center.
* Memory pieces including a choice of ROM, RAM, EEPROM and streak memory.
* Timing sources including oscillators and stage bolted circles.
* Simple interfaces including ADCs and DACs.
* Voltage controllers and power administration circuits.

Raspberry Pi interfaces

Raspberry Pi has Serial, SPI and I2C interfaces as shown in the figure of Raspberry Pi Learning board.

* Serial : The Serial interface on Raspberry Pi has receive (rx) and transmit (Tx) pins for communication with Serial peripherals.
* SPI : Serial Peripheral Interface (SPI) is a synchronous Serial data used for communicating with one or more peripheral devices.

* I2C : The I2C interface pins on Raspberry Pi allow you to connect hardware modules. I2C interface allows Synchronous data transfer with just two pins - SDA (data line) and SCL (clock ~~line~~ line).

Raspberry Operating Systems

Various operating systems can be installed on Raspberry through SD cards. Most use a MicroSD slot located on the bottom of the board.

The Raspberrypi primarily uses Raspbian, a Debian-based Linux operating System.

Operating Systems (not Linux based)

- RISC OS Pi
- FreeBSD
- NetBSD
- Plan 9 from Bell Labs and Inferno
- Windows 10 IOT Core - a no cost edition of Windows 10 offered by Microsoft that runs natively on the RaspberryPi 2.

Operating Systems (Linux based)

- Xbian - using Kodi open source digital media center
- openSUSE
- Raspberry Pi Fedora remix
- Pidora, another fedora Remix optimised for Raspberry Pi
- Gentoo Linux
- Diet Pi
- CentOS \ Open Wrt
- Kali Linux
- Ark OS
- Kano OS
- Nard SDK

Media center operating systems

- OSMC
- OpenELEC
- LibreELEC
- Xbian
- Rasplex

Audio operating Systems

- Volumio
- Pimusicbox
- Runeaudio
- moOdeaudio

Recalbox

- Happi Game Center
- Lakka
- ChameleonPi
- Piplay

Operating System Setup On RaspberryPi

Preinstalled NOOBS operating System is already available in many authorized as well as independent Seller, there are many other operating system for RaspberryPi in the market like NOOBS, Raspbian and third party Operating Systems are also available like UBUNTU MATE, OSMC, RISC OS etc. TO setup an operating System we need a SD card with minimum capacity of 8GB.

Formatting SD card

Format the SD card before copying NOOBS onto it. To do this -

- Download SD formatter 4.0 from SD Association Website for either Windows or Mac.

- Follow the instructions to install the Software
- Insert the SD card into the computer or laptops SD card reader and make a note of the drive letter allocated to it.
- In SD formatter, Select the drive letter the SD card is and format it.

OS Installation

Follow the Step to install operating System in SD card

- Go to Raspberry Pi foundation website and click on DOWNLOAD Section.
- Click on NOOBS, then click on "Download zip" button under NOOBS and Select a folder to Save this Zip file.
- Extract all the files from ZIP.
- Once SD card has been formatted, drag all the files in the extracted NOOBS folder and drop them onto the SD card drive.
- The necessary file will then be transferred to the SD card.
- When this process has finished, Safely remove the SD card and insert it into the RaspberryPi.

First Boot

- Plug in the Keyboard, mouse, and monitor cables.
- Now plug the USB cable into the RaspberryPi
- Now Raspberrypi will boot, and a window will appear with a list of different operating System.
- Raspbian will then run through its installation Process.

Programming RaspberryPi With Python

RaspberryPi runs Linux and supports python out of the box. Henceforth you can run any python program that runs on a normal computer. However it is the general purpose input/output capability provided by the GPIO pins on Raspberry Pi that makes it useful device for Internet of things.

Simple python Programs on RaspberryPi:

Program	Code
1. Print hello world	`print ("hello world")`

2. Program to add two numbers	`a = 1.2`
	`b = 5.3`
	`Sum = float(a) + float(b)`
	`Print ("the sum of {0} and {1} is {2}":`
	`format (a,b,sum))`

3. Program to print fibonacci Series	`a,b = 0,1`
	`While b < 200 :`
	`Print(b)`
	`a,b = b, a+b`

4. Program to display calender of given month of the year	`import calender`
	`yy = 2017`
	`mm = 11`
	`print(calender.month(yy.mm))`

5. Program to find the ip address of raspberrypi	`import urllib`
	`import re`
	`point("we will try to open this url, in order to get ip address")`
	`url = http://checkip.dyndns.org`
	`point(url)`

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ACADEMIC YEAR :	2023-2024
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S.NO	USN	NAME	Signature
1	1KG20CS062	M YASASWANI CHOWDARY	
2	1KG20CS064	MOHAMMED YASEEN	
3	1KG20CS065	MOHAMMED ZAYED PASHA	
4	1KG20CS067	MONISHA M	
5	1KG20CS068	NAGENDRA B N	
6	1KG20CS069	NANDAN KUMAR N	
7	1KG20CS073	NIKHIL K H	
8	1KG20CS074	NISCHITHA M	
9	1KG20CS075	NISHA M	
10	1KG20CS077	NITESH A	
11	1KG20CS082	PRAJWAL R	
12	1KG20CS083	PREETHAM N N	
13	1KG20CS084	PRERANA KUMARI	
14	1KG20CS086	RAHUL B M	
15	1KG20CS087	RAJATH K	
16	1KG20CS091	RANJITH KUMAR G D	
17	1KG20CS093	ROSHAN KUMAR L	
18	1KG20CS094	S DINESH	
19	1KG20CS097	SAHANA S HEGDE	
20	1KG20CS098	SAMYUKTHA MADHAV B	
21	1KG20CS100	SHRUTHI M	
22	1KG20CS102	SIDDHARTH GANESAN	
23	1KG20CS106	SUJAY C L	
24	1KG20CS107	SUMANTH G G	
25	1KG20CS110	TRIPURANENI VYSHNAVI	
26	1KG20CS111	V YASHWANTH NAIDU	
27	1KG20CS112	VADIRAJ	
28	1KG20CS115	VAPALAPATHI LAXMI PRIYA	

29	1KG20CS116	VELUREE BHANUPRASAD	
30	1KG20CS117	VENKATESHA D J	
31	1KG20CS118	VIBHA M	
32	1KG20CS120	VIKRAMA C	
33	1KG20CS121	VINAY A	
34	1KG20CS122	VISHWANATH VIVEK M	
35	1KG20CS124	YASHWANTH B	

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INTERNALS :	2nd

S.NO	USN	NAME	Signature
1	1KG20CS063	MEGAHANA M	
2	1KG20CS069	NANDAN KUMAR N	
3	1KG20CS069	NANDAN KUMAR N	
4	1KG20CS077	NITESH A	
5	1KG20CS081	PRAJWAL GOWDA M	
6	1KG20CS085	PRITHVIRAJ SANJAY CHAVAN	
7	1KG20CS086	RAHUL B M	
8	1KG20CS094	S DINESH	
9	1KG20CS098	SAMYUKTHA MADHAV B	
10	1KG20CS099	SHREYA S	
11	1KG20CS105	SUCHITHRA M B	
12	1KG20CS108	SWETHA M	
13	1KG20CS112	VADIRAJ	
14	1KG20CS113	VAISHNAVI N BHAT	
15	1KG20CS114	VANDITHA	
16	1KG20CS117	VENKATESHA D J	
17	1KG20CS122	VISHWANATH VIVEK M	

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INTERNALS :	3rd

S.NO	USN	NAME	Signature
1	1KG20CS066	MONALI B PIPALIYA	Monali B.
2	1KG20CS069	NANDAN KUMAR N	Nandan Kumar.N
3	1KG20CS118	VIBHA M	

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V SEM A sec Assignment Marks List - RMI

SL.NO	USN	NAME	Assignment 1 (10)	Assignment 2 (10)	Assignment 3 (10)	Total (30)	Signature
1	1KG20CS061	M ROHINI	10	10	10	30	
2	1KG20CS062	M YASASWANI CHOWDARY	10	10	10	30	
3	1KG20CS063	MEGHANA M	10	10	10	30	
4	1KG20CS064	MOHAMMED YASEEN	10	NG 10	10	30	
5	1KG20CS065	MOHAMMED ZAYED PASHA	10	10	10	30	
6	1KG20CS066	MONALI B PIPALIYA	10	10	10	30	
7	1KG20CS067	MONISHA M	10	10	10	30	
8	1KG20CS068	NAGENDRA B N	10	10	10	30	
9	1KG20CS069	NANDAN KUMAR N	10	10	10	30	
10	1KG20CS070	NANDINI M N	10	10	10	30	
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12	1KG20CS072	NAVEEN V	10	10	10	30	
13	1KG20CS073	NIKHIL K H	10	10	10	30	
14	1KG20CS074	NISCHITHA M	10	10	10	30	
15	1KG20CS075	NISHA M	10	10	10	30	
16	1KG20CS076	NISHMITHA R	10	10	10	30	
17	1KG20CS077	NITESH A	10	10	10	30	
18	1KG20CS078	NITHYA A	10	10	10	30	
19	1KG20CS079	NITHYA K	10	10	10	30	
20	1KG20CS080	PRATHIPATI HARSHITHA	10	10	10	30	
21	1KG20CS081	PRAJWAL GOWDA M	10	10	10	30	
22	1KG20CS082	PRAJWAL R	08	08	08	08	
23	1KG20CS083	PREETHAM N N	10	10	10	30	
24	1KG20CS084	PRERANA KUMARI	10	10	10	30	
25	1KG20CS085	PRITHVIRAJ SANJAY CHAVAN	10	10	10	30	
26	1KG20CS086	RAHUL B M	10	10	10	30	
27	1KG20CS087	RAJATH K	10	10	10	30	
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29	1KG20CS089	RAKSHITHA H C	10	10	10	30	
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34	1KG20CS094	S DINESH	10	10	10	30	
35	1KG20CS095	SAGAR NAIDU N	10	10	10	30	
36	1KG20CS096	SAHANA H S	10	10	10	30	
37	1KG20CS097	SAHANA S HEGDE	10	10	10	30	
38	1KG20CS098	SAMYUKTHA MADHAV B	10	08	08	09	

39	1KG20CS099	SHREYA S	10	10	10	30	
40	1KG20CS100	SHRUTHI M	10	08	08	09	
41	1KG20CS101	SIDAPARA NANCY ARVINDKUMAR	10	10	10	30	
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43	1KG20CS103	SRI RAKSHA	10	10	10	30	
44	1KG20CS104	SUCHITHA R	10	10	10	30	
45	1KG20CS105	SUCHITHRA M B	10	10	10	105	
46	1KG20CS106	SUJAY C L	10	10	10	30	
47	1KG20CS107	SUMANTH G G	10	10	10	30	
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51	1KG20CS111	V YASHWANTH NAIDU	10	10	10	30	
52	1KG20CS112	VADIRAJ	08	08	08	08	
53	1KG20CS113	VAISHNAVI N BHAT	10	10	10	30	
54	1KG20CS114	VANDITHA	10	10	10	30	
55	1KG20CS115	VAPALAPATI LAXMI PRIYA	10	10	10	30	
56	1KG20CS116	VELURU BHANUPRASAD	10	10	10	30	
57	1KG20CS117	VENKATESHA D J	08	08	08	08	
58	1KG20CS118	VIBHA M	10	10	08	28	
59	1KG20CS119	VIJAYALAKSHMI D	10	10	10	30	
60	1KG20CS120	VIKRAMA C	10	10	10	30	
61	1KG20CS121	VINAY A	10	10	10	30	
62	1KG20CS122	VISHWANATH VIVEK M	08	08	08	24/8	
63	1KG20CS123	YASHITHA T	10	10	10	30	
64	1KG20CS124	YASHWANTH B	10	10	10	30	

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YEAR /	IV /VII B
COURSE TITLE :	UID
COURSE CODE :	18CS734
ACADEMIC YEAR	2023-2024

Sl. No	USN	Name of the Student	TEST MARKS			TOTAL	FINAL IA	ROUNDED	ASSISMENT	TOTAL	STUDENTS SIGNATURE
			IA 1	IA 2	IA 3						
			30 Marks	30 Marks	30 Marks	90 M	30	30	10	40	
1	1KG20CS061	M ROHINI	21	21	27	69	23.00	23	10	33	
2	1KG20CS062	M YASASWANI CHOWDARY	9	15	21	45	15.00	15	10	25	
3	1KG20CS063	MEGAHANA M	23	21	26	70	23.33	24	10	34	
4	1KG20CS064	MOHAMMED YASEEN	6	11	17	34	11.33	12	10	22	
5	1KG20CS065	MOHAMMED ZAYED PASHA	15	23	25	63	21.00	21	10	31	
6	1KG20CS066	MONALI B PIPALIYA	21	20	25	66	22.00	22	10	32	
7	1KG20CS067	MONISHA M	13	12	13	38	12.67	13	10	23	
8	1KG20CS068	NAGENDRA B N	10	13	18	41	13.67	14	10	24	
9	1KG20CS069	NANDAN KUMAR N	12	10	10	32	10.67	11	10	21	
10	1KG20CS070	NANDINI M N	16	20	18	54	18.00	18	10	28	
11	1KG20CS071	NANDINI V	23	22	27	72	24.00	24	10	34	
12	1KG20CS072	NAVEEN V	18	27	28	73	24.33	25	10	35	
13	1KG20CS073	NIKHIL K H	13	19	21	53	17.67	18	10	28	
14	1KG20CS074	NISCHITHA M	10	18	19	47	15.67	16	10	26	
15	1KG20CS075	NISHA M	11	21	20	52	17.33	18	10	28	
16	1KG20CS076	NISHMITHA R	23	25	30	78	26.00	26	10	36	
17	1KG20CS077	NITESH A	8	3	19	30	10.00	10	10	20	
18	1KG20CS078	NITHYA A	20	16	26	62	20.67	21	10	31	
19	1KG20CS079	NITHYA K	24	26	29	79	26.33	27	10	37	
20	1KG20CS080	PATHIPATI HARSHITHA	18	23	28	69	23.00	23	10	33	
21	1KG20CS081	PRAJWAL GOWDA M	22	20	24	66	22.00	22	10	32	
22	1KG20CS082	PRAJWAL R	12	20	21	53	17.67	18	8	26	
23	1KG20CS083	PREETHAM N N	12	18	21	51	17.00	17	10	27	
24	1KG20CS084	PRERANA KUMARI	5	22	22	49	16.33	17	10	27	
25	1KG20CS085	PRITHVIRAJ SANJAY CHAVAN	13	9	20	42	14.00	14	10	24	
26	1KG20CS086	RAHUL B M	7	8	13	28	9.33	10	10	20	
27	1KG20CS087	RAJATH K	19	17	18	54	18.00	18	10	28	
28	1KG20CS088	RAKSHITHA A	22	21	20	63	21.00	21	10	31	
29	1KG20CS089	RAKSHITHA H C	23	26	29	78	26.00	26	10	36	
30	1KG20CS090	RAKSHITHA R	18	22	25	65	21.67	22	10	32	
31	1KG20CS091	RANJITH KUMAR G D	15	18	25	58	19.33	20	10	30	
32	1KG20CS092	RANJITHAA M A	22	17	19	58	19.33	20	10	30	
33	1KG20CS093	ROSHAN KUMAR L	22	20	30	72	24.00	24	10	34	
34	1KG20CS094	S DINESH	6	9	19	34	11.33	12	10	22	
35	1KG20CS095	SAGAR NAIDU N	13	14	19	46	15.33	16	10	26	
36	1KG20CS096	SAHANA H S	16	20	24	60	20.00	20	10	30	
37	1KG20CS097	SAHANA S HEGDE	14	21	29	64	21.33	22	10	32	
38	1KG20CS098	SAMYUKTHA MADHAV B	12	10	12	34	11.33	12	9	21	
39	1KG20CS099	SHREYA S	15	21	24	60	20.00	20	10	30	
40	1KG20CS100	SHRUTHI M	10	17	18	45	15.00	15	9	24	
41	1KG20CS101	SIDAPPARA NANCY ARVIND	20	26	27	73	24.33	25	10	35	
42	1KG20CS102	SIDDHARTH GANESAN	8	11	20	39	13.00	13	10	23	
43	1KG20CS103	SRI RAKSHA	21	25	27	73	24.33	25	10	35	
44	1KG20CS104	SUCHITHA R	14	21	21	56	18.67	19	10	29	
45	1KG20CS105	SUCHITHRA M B	25	15	22	62	20.67	21	10	31	
46	1KG20CS106	SUDAY G L	14	22	26	63	21.00	21	10	31	
114	SUMANTH		10	12	23	45	15	15	10	25	Sumanth

48	1KG20CS108	SWETHA M	17	16	25	58	19.33	20	10	30	
49	1KG20CS109	THANUSHREE R	12	15	24	51	17.00	17	10	27	
50	1KG20CS110	TRIPURANENI VYSHNAVI	11	15	16	42	14.00	14	10	24	
51	1KG20CS111	V YASHWANTH NAIDU	22	24	29	75	25.00	25	10	35	
52	1KG20CS112	VADIRAJ	13	10	12	35	11.67	12	8	20	
53	1KG20CS113	VAISHNAVI N BHAT	25	22	24	71	23.67	24	10	34	
54	1KG20CS114	VANDITHA	12	13	21	46	15.33	16	10	26	
55	1KG20CS115	VAPALAPATHI LAXMI PRIYA	15	21	30	66	22.00	22	10	32	
56	1KG20CS116	VELUREE BHANUPRASAD	11	18	26	55	18.33	19	10	29	
57	1KG20CS117	VENKATESHA D J	8	10	16	34	11.33	12	8	20	
58	1KG20CS118	VIBHA M	11	11	10	32	10.67	11	10	21	
59	1KG20CS119	VIJAYALAKSHMI D	11	21	22	54	18.00	18	10	28	
60	1KG20CS120	VIKRAMA C	12	16	23	51	17.00	17	10	27	
61	1KG20CS121	VINAY A	10	15	16	41	13.67	14	10	24	
62	1KG20CS122	VISHWANATH VIVEK M	10	9	11	30	10.00	10	10	20	
63	1KG20CS123	YASHITHA T	19	26	28	73	24.33	25	10	35	
64	1KG20CS124	YASHWANTH B	4	17	20	41	13.67	14	10	24	

FACULTY INCHARGE

HOD

HOD
Department of Computer Science Engineering
K.S School of Engineering & Management
Bangalore-560109

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE

Branch : CS Semester : 7

Sl NO.	USN	18CS734
1	1KG20CS001	36
2	1KG20CS002	36
3	1KG20CS003	40
4	1KG20CS004	37
5	1KG20CS005	27
6	1KG20CS006	34
7	1KG20CS007	40
8	1KG20CS008	39
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10	1KG20CS010	40
11	1KG20CS011	22
12	1KG20CS012	29
13	1KG20CS013	35
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36	1KG20CS036	40

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Sl NO.	USN	18CS734
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113	1KG20CS113	34
114	1KG20CS114	26

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121	1KG20CS121	24
122	1KG20CS122	20
123	1KG20CS123	35
124	1KG20CS124	24
125	1KG21CS400	39
126	1KG21CS401	40
127	1KG21CS402	40

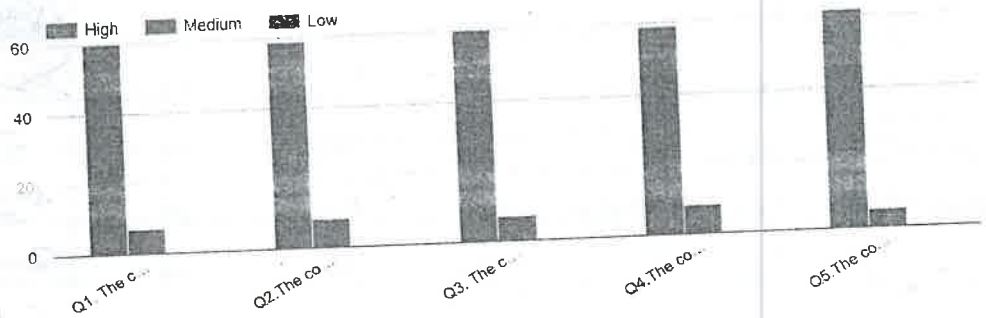
K[illegible]chool of Engineering and Management
Department of Computer Science and Engineering
USER INTERFACE DESIGN - 21CS734 Academic Year- 2023-24 Semester -VII B Section

Timestamp	Email Address	USN	NAME	Section :	Faculty Name:	1.The course followed the syllabus prescribed by the university.	2.The course was organized in a manner that helped me to understand underlying concepts .	3.he course assignments /test assesses what I have learned in this course.	4.The course developed my ability to apply theory to real time example.	5.The course has improved my knowledge on User Interface Design Concepts.	6.Course was helpful to understand most of the User Interface Design related concepts.	Students signature
12-28-2023 10:18:51	rohinimallarapu@gmail.com	1KG20CS061	M Rohini	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 10:59:18	yasaswanimedarametla@gmail.com	1KG20CS062	M. Yasaswani	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 19:33:06	meghanamahalinga410@gmail.com	1KG20CS063	Meghana M	7th 'B'	Mrs.Meena G	Medium	Medium	Medium	Medium	Medium	Medium	
12-28-2023 18:50:53	mohammedyaseen20011@gmail.com	1KG20CS063	Mohammed Yaseen	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 12:34:57	mohammedzayed602@gmail.com	1KG20CS063	Mohammed zayed	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 18:48:14	monali1762002@gmail.com	1KG20CS066	Monali B Pipaliya	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 11:24:16	monisha4134@gmail.com	1KG20CS067	Monisha M	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 18:53:56	nagendrabn2707@gmail.com	1KG20CS068	NAGENDRA B N	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 19:08:02	nkumarn354@gmail.com	1KG20CS069	Nandan kumar N	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-29-2023 9:23:16	nandunandu10142@gmail.com	1KG20CS070	Nandini M N	7th 'B'	Mrs.Meena G	Medium	Medium	High	High	High	High	
12-28-2023 18:56:26	nandiniv0406@gmail.com	1KG20CS071	Nandini.V	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 18:54:24	naveenvelu2280@gmail.com	1KG20CS072	Naveen V	7th 'B'	Mrs.Meena G	Medium	High	High	High	Medium	Medium	
12-28-2023 21:00:21	nikhil.kh16@gmail.com	1KG20CS073	Nikhil kh	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 19:46:28	nischithamnisha@gmail.com	1KG20CS074	Nischitha M	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-29-2023 13:44:45	mnisha7486@gmail.com	1KG20CS075	Nisha M	7th 'B'	Mrs.Meena G	Medium	Medium	High	Medium	Medium	Medium	
12-29-2023 13:13:39	nishmitharaju19@gmail.com	1KG20CS076	Nishmitha R	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-29-2023 13:19:14	nnpreethamgowda278@gmail.com	1KG20CS077	Preetham N N	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	

12-28-2023 13:43:14	nitesha775@gmail.com	1KG20CS077	Nitesh	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 18:47:37	nithya24a@gmail.com	1KG20CS078	NITHYA A	7th 'B'	Mrs.Meena G	High	Medium	High	High	High	Medium		
12-29-2023 14:01:55	nithubhoomi789@gmail.com	1KG20CS079	Nithya.K	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 12:48:28	harshithapathipati7117@gmail.com	1KG20CS080	Pathipati Harshitha	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 21:59:00	prajwal143sudeeep@gmail.com	1KG20CS081	Prajwal Gowda M	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 20:15:29	prajwalprajwal5252@gmail.com	1KG20CS082	Prajwal R	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 10:18:46	prerana99010@gmail.com	1KG20CS084	Prerana Kumari p	7th 'B'	Mrs.Meena G	Medium	Medium	High	Medium	Medium	Medium		
12-29-2023 13:43:40	chavanprithvi45@gmail.com	1KG20CS085	Prithviraj	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-29-2023 13:54:23	rahulbm080@gmail.com	1KG20CS085	Rahul	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-29-2023 13:58:37	rajathnaik3@gmail.com	1KG20CS087	RAJATH K	7th 'B'	Mrs.Meena G	Medium	Medium	Medium	Medium	Medium	Medium		
12-29-2023 8:35:59	rakshithagowdaa33@gmail.com	1KG20CS088	Rakshitha A	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 11:39:24	rakshu2504@gmail.com	1KG20CS089	Rakshitha HC	7th 'B'	Mrs.Meena G	Medium	High	High	High	High	High		
12-28-2023 11:39:03	rakshitharajesh02@gmail.com	1KG20CS090	RakshithaR	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 19:47:29	shreyashivamurthy@gmail.com	1KG20CS09[illegible]	Shreya. S	7th 'B'	Mrs.Meena G	High	High	High	High	Medium	Medium		
12-28-2023 10:47:56	ranjithkumargd2002@gmail.com	1KG20CS091	Ranjith Kumar GD	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-29-2023 15:16:35	ranjithaa1308@gmail.com	1KG20CS092	Ranjithaa MA	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 18:50:21	roshankumarvijay2002@gmail.com	1KG20CS093	Roshan Kumar L	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 10:59:02	dineshs65663@gmail.com	1KG20CS094	S.DINESH	7th 'B'	Mrs.Meena G	High	High	High	Medium	High	High		
12-28-2023 11:02:16	sagarnaidu7338260200@gmail.com	1KG20CS095	Sagar Naidu	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 18:47:50	hssahana316@gmail.com	1KG20CS096	Sahana.H.S	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 18:50:56	sahanahegde467@gmail.com	1KG20CS097	Sahana S Hegde	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-29-2023 14:06:50	samyukthamadhav19@gmail.com	1KG20CS098	Samyuktha madhav	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		
12-28-2023 18:57:56	iamshruthimanjunath@gmail.com	1KG20CS100	Shruthi M	7th 'B'	Mrs.Meena G	High	High	High	High	High	High		

12-29-2023 14:05:25	nancy5sayshi@gmail.com	1KG20CS101	Sidapara N...cy Arvindkumar	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 10:59:40	siddharthganesan66@gmail.com	1KG20CS102	Siddharth Ganesan	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 11:40:36	sriraksha shetty57@gmail.com	1KG20CS103	Sriraksha	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 20:22:06	suchithargowda248@gmail.com	1KG20CS104	SUCHITHAR	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-29-2023 13:54:59	suchithrambgowda@gmail.com	1KG20CS10[illegible]	SUCHITHRA M B	7th 'B'	Mrs.Meena G	Medium	Medium	High	High	High	High	
12-28-2023 10:39:37	sjyhappyend@gmail.com	1KG20CS106	Sujay	7th 'B'	Mrs.Meena G	High	High	Medium	High	High	High	
12-28-2023 18:50:31	sumanthsumanth71814@gmail.com	1KG20CS107	Sumanth GG	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 12:34:29	swethamurugesh1@gmail.com	1KG20CS108	Swetha M	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 12:42:01	thanuraj.1907@gmail.com	1KG20CS109	Thanushree R	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 10:59:46	vyshnavit2003@gmail.com	1KG20CS110	TRIPURANENI VYSHNAVI	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-29-2023 13:53:00	yashwanthnaidu27@gmail.com	1KG20CS111	V yashwanth Naidu	7th 'B'	Mrs.Meena G	High	High	Medium	High	High	Medium	
12-28-2023 10:19:07	vaishnbhat@gmail.com	1KG20CS111	Vaishnavi N Bhat	7th 'B'	Mrs.Meena G	High	High	High	Medium	High	High	
12-29-2023 14:02:02	vadiraj4646@gmail.com	1KG20CS112	Vadiraj R Nadig	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 18:50:43	vandithamogaveera@gmail.com	1KG20CS114	Vanditha	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 10:25:17	luckycrz24@gmail.com	1KG20CS115	V Laxmi priya	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 14:51:49	bhanuprasadveluru@gmail.com	1KG20CS116	Veluru Bhanuprasad	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 10:46:50	venkateshreddytml@gmail.com	1KG20CS116	Venkatesh dj	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-29-2023 13:50:53	vvibha526@gmail.com	1KG20CS116	Vibha M	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 10:18:28	dvijayalakshmi911@gmail.com	1KG20CS119	Vijayalakshmi D	7th 'B'	Mrs.Meena G	Medium	Medium	Medium	Medium	Medium	Medium	
12-28-2023 18:54:08	vicky2001107@gmail.com	1KG20CS120	Vikram c	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 20:24:21	vinayvikas231@gmail.com	1KG20CS12[illegible]	Vinay A	7th 'B'	Mrs.Meena G	Medium	Medium	Medium	Medium	Medium	Medium	
12-28-2023 19:34:54	vishwanathvivek1824@gmail.com	1KG20CS122	Vishwanath vivek	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	
12-28-2023 18:49:50	yashitha359@gmail.com	1KG20CS123	Yashitha.T	7th 'B'	Mrs.Meena G	High	High	High	High	High	High	

12-28-2023 19:01:22	yashyashwanth166@gmail.com	1KG20CS124	YASHWANTH B	7th 'B'	Mrs.Meena G	Medium	Medium	Medium	High	Medium	High	



Faculty Incharge

HOD

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Department of Computer Science Engineering
K.S School of Engineering & Management
Bangalore-560109

K. S. School of Engineering & Management, Bangalore - 560109

Department of Computer Science Engineering

Staff Feedback (2023-24) Odd Sem

Seventh Sem 'A' Section

Faculty Name: Mrs. Meena G

Course Name & Code: USER INTERFACE DESIGN /18CS734

Class Strength:65

Sl. No.	1. Effective Planning & organisation	2. Punctuality / Class time Utilization	3. Ability to teach /explain / effective use of board	4. Interaction / Motivating students	5. Subject knowledge	6. Presentation of the subject / communication	7. Linking subject with practical application	8. Syllabus covearage / exam point of view	9. Evaluation of test / counselling	10. Attitude towards students
1	5	5	5	5	5	5	5	5	5	5
2	5	5	5	5	5	5	5	5	5	5
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4	5	5	5	5	5	5	5	5	5	5
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36	5	5	5	5	5	5	5	5	5	5
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41	4	4	4	4	4	4	4	4	4	4
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56	5	5	5	5	5	5	5	5	5	5
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61	4	4	4	4	4	4	4	4	4	4
62	4	4	4	4	4	4	4	4	4	4
63	5	5	5	5	5	5	5	5	5	5
64	5	5	5	5	5	5	5	5	5	5
Col. Total	311	309	309	310	308	308	309	313	310	308
Col. Avg.	4.86	4.83	4.83	4.84	4.81	4.81	4.83	4.89	4.84	4.81
Over all %	96.72									

Head of Department
HOD
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