USN

Sub:	USER INTERFACE DESIGN				Sub Code:	18CS734	Branch:	
Date:	21/10/22	Duration:	90 mins	Max Marks:	50	Sem/Sec:	VII A,B,C	
Answer any FIVE FULL Questions								MARKS

1.	Explain about an instance in which stakeholders created obstacles during product development. How will you overcome those obstacles?	[10]

Instance explanation-3 marks

Methods to Overcome obstacles- 7 Marks

Product designers face various challenges during the development cycle, however, not all of them are technical. Some of the challenges are due to external factors such as cost, economic changes, competitor influence, company policy etc.

6 challenges that a UI designer may face and some tips to help you deal with them.

A lack of time

As an industry, UI / UX designers have less time to create each project. This means that they have to come up with efficient strategies to complete their work in an efficient manner. These strategies can include using lightweight design tools, creating libraries of reusable designs, and using animations for a better user experience.

Tools like [Figma](#) and [Whimsical](#), along with other design elements like [Platforma](#) and many other wireframing kits available.

No knowledge about the target audience

If you are not sure about the target audience, there are two main things you should do. First, find out the industry that your product is in. Second, find out what your competitors are doing.

In order to design effective UI & UX for a new product or service, it is important to know who you are designing for. For example, if your product targets less "tech-savvy" people then you may want to make the design extra simple with guides and tutorials. Extra features like pointers when a user has been inactive on a screen for an extended period of time may be very useful for the user.

The first thing you should do is identify the industry that your product or service is in and then figure out what your competitors are doing. If you don't know who your target audience is, this will make it difficult for you to design UI that will get the outcome that you want from your product.

No knowledge about what users want from your product

Easily the most difficult one of all especially within the Caribbean, since we have little data on consumer behavior especially from a tech standpoint. However, you'd be surprised to know that a conversation with a few people within the industry, consumers or producers, could provide insightful knowledge.

The problem of understanding what users want from a product is a very common one for startups, and even established businesses here in the Caribbean who are delving into [Saas](#) products. It's not easy to know if your product is solving a problem that people care about or if they are willing to pay for it or even use it.

In the early days, founders, design teams, and decision-makers have to rely on their intuition and feedback from friends and family. But as the startup grows, more data becomes available and they can start using analytics tools like [Google Analytics](#), [Mixpanel](#), [KISSmetrics](#), etc.

Google Analytics is a free tool that provides insights into how people interact with your website or app by tracking their behavior on the site. These insights help you understand what features they use most often and how long they stay on your site or app. Web page admins, startups, and companies can gain insights into how their audience interacts with their webpage by mining data from the webpage. This data can be used to help them improve the user experience by making changes to pages, products, or marketing campaigns based on customer behavior.

The product is not being used by enough people to get feedback from them

This is a common problem, especially for Caribbean startups. The regular growth and trajectory that you would hope for in a start-up are difficult to apply those same rules to Caribbean startups and tech products as a whole. I'm hoping that in the coming years we will see more growth in tech adoption in the Caribbean and more importantly more tech education for the people especially in my home country Saint Lucia and I'm hoping that's not asking for too much.

Right now my main method for solving this problem is to ramp up product testing both before and after release. [Bootstrap](#) as much of the product's early usage as possible. By that I mean do everything yourself, try to get people to test it, and incentivize them to do so. This way you can get data on the product before it's out and continue to monitor the data in real-time so that you can make adjustments quickly.

2(A)	Describe What a UI Design Failure Might Look Like on a Newly Launched Product? Explain the difference between usability and accessibility?	[8]

UI Design Failure- 6 Marks

reasons that lead to UI design failure for a website and certain UI design tips to avoid those setbacks.

1. Non Responsive Web Design

Today, all organizations are following the mobile first approach. It is ideal that you must think alike your competitors and develop a website that adheres to the best UI practices related to responsive design, works properly on all devices without any horizontal scrolling and has passed all cross browser testing strategies for mobile as well as desktop browsers.

2. Subtle Sale Is An Artform – One That Is Difficult To Master

Persuasive design is the latest trend in the UX world, which intrigues the end user in thinking what is next and compels him to navigate further in the website. We will give you an important UI design tip. Never overuse this strategy. If the end user gets annoyed, they will not think twice before moving on to a different site.

3. Color Scheme Makes All The Difference

While planning the design of your website, use a proper color code for fonts, headings as well as backgrounds. Study the color theory properly to find out which color looks good on which background. UI design tips provided by experts state that a well-coordinated color planning will work better in attracting a client rather than using animations. Here is one of the examples of a great color choice. You can refer to source for more trendy web color palettes.

4. Eye-Catching Flash Elements

The recent UI design tips states that simplified elements attracts a user more rather than using eye-catching color and buttons. Especially, usage of flash elements must be avoided since they are not supported in many browsers, resulting in failure in cross browser testing.

5. Website Not Being Cross Browser Compatible

Today, with so many browsers available on the internet, with their usage share varying across different demographics and devices, we shall give you one of the best UI design tips before you release your website. Perform proper cross browser testing and make sure that your website runs properly on all the targeted browsers. Here is an example of a div that looks different in every browser.

6. Improper Font-Size

Keeping a consistent font-size and font-family is very important when you are following the best UI practices. Bold and big typographies are accepted, but it is improper if there is a 4:1 ratio between the font size of a heading and a paragraph.

2(B)	Discuss the characteristics of Intranet and Internet.	[2]
	Characteristics- 2 Marks	
	A wide network of computers available for all is the internet, while the intranet is a network of computers designed for a certain group of users. The internet is a public network, while an intranet is a private network.	
	- The internet is a network built by the cooperative connectivity of millions of computers that are linked together. - An intranet is a private network developed within an enterprise utilizing the internet and world wide web standards and technologies that gives employees access to business data.	
	Discuss the characteristics of Intranet and Internet.	[2]
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| 3(A) | Explain some significant direct techniques for determining business requirements. | [5] |

Techniques - 5 Marks

- Technique 1: Using stakeholder interviews. Talk with each stakeholder or end-user individually. ...
- Technique 2: Using joint interviews or focus groups. Conduct group workshops. ...
- Technique 3: Using "use cases" ...
- Technique 4: Building prototypes.

Here are some recommended direct methods for getting input from users.

Individual Face-to-Face Interview

· A one-on-one visit with the user to obtain information. It may be structured or somewhat open-ended.

· A formal questionnaire should not be used, however. Useful topics to ask the user to describe in an interview include:

· The activities performed in completing a task or achieving a goal or objective.

· The methods used to perform an activity.

· What interactions exist with other people or systems?

· It is also very useful to also uncover any:

o Potential measures of system usability

o Unmentioned exceptions to standard policies or procedures.

o Relevant knowledge the user must possess to perform the activity.

Advantages

Advantages of a personal interview are that you can give the user your full attention, can easily include follow-up questions to gain additional information, will have more time to discuss topics in detail, and will derive a deeper understanding of your users, their experiences, attitudes, beliefs, and desires.

Disadvantages

Disadvantages of interviews are that they can be costly and time-consuming to conduct, and someone skilled in interviewing techniques should perform them.

Telephone Interview or Survey

A structured interview conducted via telephone.

Advantages

Arranging the interview in advance allows the user to prepare for it.

Telephone interviews are less expensive and less invasive than personal interviews.

They can be used much more frequently and are extremely effective for very specific information.

Disadvantage

It is impossible to gather contextual information, such as a description of the working environment, replies may be easily influenced by the interviewer's comments, and body language cues are missing.

Also, it may be difficult to contact the right person for the telephone interview.

3(B)	Discuss the models for determining basic business functions.	[5]

2 Models-Each 2.5 Marks

Determining Basic Business Functions

A detailed description of what the product will do is prepared. Major system functions are listed and described, including critical system inputs and outputs. A flowchart of major functions is developed. The process the developer will use is summarized as follows:

·   Gain a complete understanding of the user's mental model based upon:

     o   The user's needs and the user's profile.

     o   A user task analysis.

·   Develop a conceptual model of the system based upon the user's mental model.

 This includes:

     o   Defining objects.

     o   Developing metaphors.

Understanding the User's Mental Model

A goal of task analysis, and a goal of understanding the user, is to gain a picture of the user's mental model. A mental model is an internal representation of a person's current conceptualization and understanding of something.

Mental models are gradually developed in order to understand, explain, and do something. Mental models enable a person to predict the actions necessary to do things if the actions have been forgotten or have not yet been encountered.

Performing a Task Analysis

User activities are precisely described in a task analysis. Task analysis involves breaking down the user's activities to the individual task level. The goal is to obtain an understanding of why and how people currently do the things that will be automated.

Knowing why establishes the major work goals; knowing how provides details of actions performed to accomplish these goals. Task analysis also provides information concerning workflows, the interrelationships between people, objects, and actions, and the user's conceptual frameworks. The output of a task analysis is a complete description of all user tasks and interactions.

One result of a task analysis is a listing of the user's current tasks. This list should be well documented and maintained. Changes in task requirements can then be easily incorporated as design iteration occurs. Another result is a list of objects the users see as important to what they do. The objects can be sorted into the following categories:

·   Concrete objects—things that can be touched.

     ·   People who are the object of sentences—normally organization employees, customers,

     ·   for example.

     ·   Forms or journals—things that keep track of information.

| 4. | Explain the 8 characteristics of successful graphical user interface. | [10] |

Characteristics - 10 Marks

Characteristics of the Graphical User Interface

Sophisticated Visual Presentation

Visual presentation is the visual aspect of the interface. It is what people see on the screen. The sophistication of a graphical system permits displaying lines, including drawings and icons. It also permits the displaying of a variety of character fonts, including different sizes and styles.

The meaningful interface elements visually presented to the user in a graphical system include windows (primary, secondary, or dialog boxes), menus (menu bar, pulldown, pop-up, cascading), icons to represent objects such as programs or files, assorted screen-based controls (text boxes, list boxes, combination boxes, settings, scroll bars, and buttons), and a mouse pointer and cursor. The objective is to reflect visually on the screen the real world of the user as realistically, meaningfully, simply, and clearly as possible.

Pick-and-Click Interaction

To identify a proposed action is commonly referred to as pick, the signal to perform an action as click. The primary mechanism for performing this pick-and-click is most often the mouse and its buttons and the secondary mechanism for performing these selection actions is the keyboard.

Restricted Set of Interface Options

The array of alternatives available to the user is what is presented on the screen or what may be retrieved through what is presented on the screen, nothing less, and nothing more. This concept fostered the acronym WYSIWYG.

Visualization

Visualization is a cognitive process that allows people to understand information that is difficult to perceive, because it is either too voluminous or too abstract.

The goal is not necessarily to reproduce a realistic graphical image, but to produce one that conveys the most relevant information. Effective visualizations can facilitate mental insights, increase productivity, and foster faster and more accurate use of data.

Object Orientation

A graphical system consists of objects and actions. Objects are what people see on the screen as a single unit.

Objects can be composed of subobjects .For example, an object may be a document and its sub objects may be a paragraph, sentence, word, and letter. Objects are divided into three meaningful classes as Data objects, which present information, container objects to hold other objects and Device objects, represent physical objects in the real world.

Objects can exist within the context of other objects, and one object may affect the way another object appears or behaves. These relationships are called collections, constraints, composites, and containers.

Properties or Attributes of Objects : Properties are the unique characteristics of an object. Properties help to describe an object and can be changed by users.

Actions : People take actions on objects. They manipulate objects in specific ways (commands) or modify the properties of objects (property or attribute specification).

The following is a typical property/attribute specification sequence*:* o The user selects an object—for

5(A)	**Why Is UI Vital for Any Business** **Importance of UI- 5 Marks** **Since UI and UX development largely focus on the users' satisfaction and pleasure, it plays an important role in the business' success. From a business's point of view, it is essential to emphasize the users' satisfaction to build your brand value and reputation and UI is a key factor in ensuring that satisfaction.** **User interface is important to meet user expectations and support the effective functionality of your site. A well-executed user interface facilitates effective interaction between the user and the program, app or machine through contrasting visuals, clean design and responsiveness**	[5]
5(B)	What is HCI? Why is HCI important **HCI Explanation -3 Marks** **HCI (human-computer interaction) is the study of how people interact with computers and to what extent computers are or are not developed for successful interaction with human beings. A significant number of major corporations and academic institutions now study HCI.** **Human computer interaction examples include: Interaction with a mobile app. Browsing a website from your desktop computer. Using internet of things (IoT) devices** **Importance of HCI- 2 Marks** HCI is critical since it will be necessary for goods to be more successful, safe, helpful, and functional. It will make the user's experience more enjoyable in the long term. As a result, having someone with HCI skills involved in all phases of any product or system development is critical. HCI is also necessary to prevent goods or projects from failing completely. When creating clear intuitive systems that will be accessible by people with a wide variety of talents and knowledge, as well as those who have not finished any official training, HCI is critical. HCI makes software and gadgets more intelligible and useful for everyone by leveraging our everyday knowledge of the environment. As everyone has used genuine paper folders in their daily lives, displaying a visual of a small folder in a computer's interface helps the user comprehend the folder's purpose. Finally, if a system is well-designed using HCI approaches, the user should not have to worry about the system's complexities. Clear, straightforward, and natural interaction should be the norm.	[5]
6(A)	**Case study : Designing A Better Cinema Experience** Designer Ariel Verber recognized some pain points with booking cinema tickets in Tel Aviv, Israel, where he lives. He pointed out a tiresome ticket booking experience in his UI case study. The user had to feed all the information like movie name, time, theater, location, etc. Also, after going through the entire process, there was no guarantee of confirmed ticket booking. He picked up the most popular cinema app – Cinema City, to improve its UI/UX design for a seamless cinematic experience. So, he decided to segregate the browsing functionality into 'Search by Title' and 'Search by Time' in his new UI design. That helped the interface become simple and easier to navigate. He further reduced the cognitive load by replacing the date pickers with large buttons displaying weekdays for the current week. He introduced morning, afternoon, evening, and late-night buttons under the 'Search by Time' category. Besides each screening tab, he added beautiful graded icons showing seat availability. Lastly, payment through Apple Pay or Google Pay was the icing on the cake. Q1:Share your views regarding the case study about the designing process, how convenient it will be for user. **Analysis of Case Study- 5 Marks**	[5]

6(B)	How does user interface development differ from web application development?	[5]

Difference among UI and Web development- 5 Marks

The difference between a web developer and a UI developer is: Web Developer: builds an entire end-to-end web solution. UI Developer: improves the look, feel and usability of an application or web page.

Designer /Developer	Web	GUI
Who	Professionals and non-professionals (almost everyone can design a web page)	Professionals
Nature	Interface oriented towards navigation in contents	Interface oriented towards functionality and application domain
Technology	Low risk in deployment, user testing	Moderate risk in deployment, software testing
Disciplines	Information architecture, human factors, graphics, marketing,…	Information Technology and application domain specialists
Usability	Depending on the profile of designers/developers Usability may be hard to control as	Depending on the development process followed Usability built in the software and

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Internal Assessment Test 1 – Oct 2022

Sub:	USER INTERFACE DESIGN					Sub Code:	18CS734	Branch:	CSE		
Date:	21/10/22	Duration:	90 mins	Max Marks:	50	Sem/Sec:		VII A,B,C		OBE	
	Answer any FIVE FULL Questions							MARKS	CO	RBT
1.	Explain about an instance in which stakeholders created obstacles during product development. How will you overcome those obstacles?							[10]	CO1	L2
2(A)	Describe What a UI Design Failure Might Look Like on a Newly Launched Product? Explain the difference between usability and accessibility?							[8]	CO1	L2
2(B)	Discuss the characteristics of Intranet and Internet.							[2]	CO1	L1
3(A)	Explain some significant direct techniques for determining business requirements.							[5]	CO1	L2
3(B)	Discuss the models for determining basic business functions.							[5]	CO2	L1
4.	Explain the 8 characteristics of successful graphical user interface.							[10]	CO2	L3
5(A)	Why Is UI Vital for Any Business							[5]	CO2	L2
5(B)	What is HCI? Why is HCI important							[5]	CO1	L2
6(A)	**Case study : Designing A Better Cinema Experience** Designer Ariel Verber recognized some pain points with booking cinema tickets in Tel Aviv, Israel, where he lives. He pointed out a tiresome ticket booking experience in his UI case study. The user had to feed all the information like movie name, time, theater, location, etc. Also, after going through the entire process, there was no guarantee of confirmed ticket booking. He picked up the most popular cinema app – Cinema City, to improve its UI/UX design for a seamless cinematic experience. So, he decided to segregate the browsing functionality into 'Search by Title' and 'Search by Time' in his new UI design. That helped the interface become simple and easier to navigate. He further reduced the cognitive load by replacing the date pickers with large buttons displaying weekdays for the current week. He introduced morning, afternoon, evening, and late-night buttons under the 'Search by Time' category. Besides each screening tab, he added beautiful graded icons showing seat availability. Lastly, payment through Apple Pay or Google Pay was the icing on the cake. Q1:Share your views regarding the case study about the designing process, how convenient it will be for user.							[5]	CO2	L4
6(B)	How does user interface development differ from web application development							[5]	CO1	L2

CO PO Mapping

	Course Outcomes	Modules covered	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	Describe the characteristics of Graphics Interface and its principles.	1 & 2	2	3	-	3	-	3	-	-	-	-	-	-	-	-	3	2
CO2	Analyze, design and evaluate user interface design	1,2,3,4 & 5	2	3	3	3	-	3	-	-	-	-	-	-	-	-	3	2
CO3	Explain the components of web systems	2,3 & 4	2	3	2	3	-	3	-	-	-	-	-	-	-	-	3	2
CO4	Demonstrate the guidelines of multimedia.	2,3 & 4	2	3	2	3	-	3	-	-	-	-	-	-	-	-	3	2
CO5	Understand the prototype and kinds of test	5	2	3	2	3	-	3	-	-	-	-	-	-	-	-	3	2

COGNITIVE LEVEL	REVISED BLOOMS TAXONOMY KEYWORDS
L1	List, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc.
L2	summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
L3	Apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover.
L4	Analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer.
L5	Assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize.

PROGRAM OUTCOMES (PO), PROGRAM SPECIFIC OUTCOMES (PSO)				CORRELATION LEVELS	
PO1	Engineering knowledge	PO7	Environment and sustainability	0	No Correlation
PO2	Problem analysis	PO8	Ethics	1	Slight/Low
PO3	Design/development of solutions	PO9	Individual and team work	2	Moderate/ Medium
PO4	Conduct investigations of complex problems	PO10	Communication	3	Substantial/ High
PO5	Modern tool usage	PO11	Project management and finance		
PO6	The Engineer and society	PO12	Life-long learning		
PSO1	Develop applications using different stacks of web and programming technologies				
PSO2	Design and develop secure, parallel, distributed, networked, and digital systems				
PSO3	Apply software engineering methods to design, develop, test and manage software systems.				
PSO4	Develop intelligent applications for business and industry				