Question 1

"It is easy to make a *user interface* but it is hard to make a good one" (Lauesen, 2005).

(a) Describe what a user interface is. Give 2 e.g. **(*own examples*)** to support your answer.

- User interface is the part of the product, system or software that user can see, hear and touch.
- For example, in Messenger application on computer, users can use keyboards to type messages and use mouse to click the button for sending messages to someone.
- They can also use microphones from their devices to record their voice and send it to the person he or she is chatting with.

(b) Referring to any 2 interactive products/systems/software that you have used before *(e.g. coffee vending machine, GPS, TV remote controller, computer game, e-commerce website, popular word processor, Google Classroom, etc), w*rite down what it is that you like about each of them and what it is that you do not like. Describe your overall experienced in using each of them *(e.g. is it usable? is it fun to use? Does it helps you to achieve your goals easily? etc).*

- Google Classroom
    - It is a useful education online platform to enable teachers to post any announcement or assign any classwork to students to take attention to.
    - Students can also use it to submit their classwork to teachers and receive any latest notice anywhere and anytime.
    - However, sometimes there are too many classroom students who have joined in. Thus, this might be complicated when students need to access to desired classroom to check contents. Some classrooms are abandoned as the semester is over, but they still appeared on the application main page. It might make students confused about which classroom they should access to enter their desired classroom. At the end, they will spend more time to get access to the classroom.
    - Overall, I think it is usable and pleasant to use. It helps me to easily receive any updates from my tutors and ease for submitting any homework to tutors. When I face any doubts, I can directly reach out to my tutors through the comment section below the assignment area. Then, the tutors can receive my comments and reply.

- Waze
    - It is a GPS application which helps people to find a suitable route to go to one place from where he or she is located at. Mostly, it is used by traffic drivers to navigate them to their desired destination.
    - There is a useful function provided by Waze, which allows Waze users to update the road condition information timely. Thus, other Waze users will get noticed about what is happening along their way.
    - Waze also provides a feature where users can choose whether to avoid the toll roads or highways. This can offer another option for users when selecting the best route for users.
    - However, the options for choosing "avoid roll roads" and "avoid highways" are too hidden. They are located inside the settings and not easy for the users to find out. The users cannot immediately change the options when they want to start navigation, they have to go into the settings section and click the submenu one by one so that they can change the option and start a new navigation route.

- Overall, I think it is a usable application and fun to use. It can help me to find out the best path to go to desired location within short time. I just need to open the "GPS" function on my phone and enter the destination address on the Waze application search bar, then it can immediately find out the suitable route for me.

Question 2

(a) What do you understand by the term "*usability problems*". Give 2 examples (***own examples***) to support your answer.

- The term "usability problems" indicates that the product, system or software which is not usable at all, and it even make its users confused. Thus, the users cannot easily make the right decision to achieve their goals when using the product.
- For example, software with usability problems will lead users to make more errors. In Shopee application, sometimes there are many advertisements pops out and this could make users to accidentally click on the wrong button or make the undesired operation.
- For example, software with usability problems will decrease user productivity and increase the time spent accomplishing desired tasks. In Microsoft Word, some tools are hidden in the section, which is not easy for users to see. This will make the users spend more time finding out where to access the tool.

(b) Suggest ways to improve the usability of a product/system/software. Explain your answer.

- The software developers must focus on the needs requested by the clients or users. So, they can design a suitable User Interface and functionalities that can fulfil users' requirements.

- Software developers should also identify and understand the current background and situation faced using PACT analysis before starting an UI design. Based on the people, activity, context and technologies situations analyzed, they can develop a more excellent software to fulfil users' requirement and ease users to interact with the software while executing any tasks immediately.

Question 3

(a) What are the disciplines that contributed to HCI?

- Computer Science: The study of construction of software.
- Cognitive psychology: The study of how info is processed and represented in mind.
- Ergonomics or human factors: The study of human beings in relationship to their working environment.
- Social and Organizational Psychology: The ideal designer of interactive systems should have expertise in a variety of disciplines.

(b) Dix (2004) stated that, *"It is not possible to design effective interactive systems from one discipline in isolation*". Explain why this is the case.

- Without the discipline of computer science, software developers will never know the current capabilities and limitations of the technology. At the end, the planning of blueprint of the software will never be implemented as the insufficient experience or

knowledges.

- The cognitive psychology discipline is also crucial for software developers to know what the limitations and capabilities of the users is. If this discipline is not applied, the product created will be difficult to be adopted by users as the product has low usability and is not user-friendly.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

List 3 benefits of system/software/product with good interface design.

List 3 negative effects of system/software/product with bad interface design.

Read the following paper/web page and highlight some points that made the most impact on you. Be focus on issue related to HCI.

(a) "Guaranteeing Rights for the User" by Clare-Marie Karat. http://www.research.ibm.com/compsci/spotlight/hci/p29-karat.pdf

(b) "Ubuntu's Mark Shuttleworth on shaking up system software" by By Leo Kelion. http://www.bbc.com/news/technology-17916879

Question 1

"To the user the UI is the system. Most interfaces need to be designed to accommodate both the novice and expert users at the same time."

Do you agree with the above statement? Give 2 examples (**own examples**) to support your answer.

- Yes, I agree with the above statement.
- Facebook
  - In Facebook account registration page, there are many data field that the novice users need to fill in. The novice users will desire to gain the sufficient instruction and information so that they can know which detailed information they need to fill in to complete the account registration. Thus, the system will label clearly what data is required from the novice users.
  - When it is the first time novice users access Facebook, it will guide the users step by step for every single common function that is needed to know. So, they can easily understand the method to execute the common actions by the guidance provided by Facebook. Novice users do not need to find it by themselves on other searching platforms for obtaining the tutorials for using some features.
  - For expert users, Facebook has designed the page with multiple tabs with different functions. It only labels the tabs using symbolic icon images but still can be recognized by the expert users. They just need to click or tap on the icon; the system will redirect them to the desired section.
- WhatsApp
  - WhatsApp has provided an obvious chat box and various tools such as insert attachment and emoji. It can be easily found and recognized by novice users. Thus, they can click on it and execute the respective action quickly.
  - WhatsApp also designed some features such as pin a message, reply to a message or even react to a message. Those features can be applied by expert users via right clicking on the desired message and select the option.
  - WhatsApp provides some shortcut keys for expert users to use when typing messages in chat box. For example, expert users can add strikethrough on their text in chat box by surrounding the wanted text with "~".

Question 2

(a) How do the requirements of an expert user different from those of a novice? Present your answer in a table format.

Requirement of expert user	Requirement of novice user
- System should provide the shortest and easiest path for executing an action.	- System should provide the simplest and clearest instruction for executing an action.
- System should provide brief feedback only. The expert user can directly highlight the crucial message and move on to the next steps immediately.	- System should provide sufficient feedback help. Thus, the users can easily understand what is going on and get to know what they need to do if anything goes wrong.
- The system should offer the keyboard shortcuts as many as possible.	- System should provide obvious options for users instead of expecting users will use keyboard

	shortcuts.

Tutor answer:

Comparison	Novice	Expert
Screen density	Low	High
Shortcut	❌	✔
Feedback	Detailed	Brief

(b) If you are developing a system that needs to cater for both the novice and expert users at the same time, which category of user would you pay more attention to? Give reasons for your answer.

- I would pay more attention to expert users.
- In my opinion, an efficient and effective system will make users more willing to use it for a longer time.
- Although new users might take some time to learn to be proficient in the system operation, users will be able to execute any action they want immediately once they have familiar with the system operation.
- This may maintain more loyal users as they have getting familiar with the system, and they can use the shortest path to complete their task in the system.

Question 3

To design an effective interactive system, it is necessary to know the answers to the following 3 questions:

1. Who are the users?
2. What are the tasks?
3. What is the environment in which the system will operate?

Give reasons why it is important for a designer to have the answers to the above 3 questions?

- The designer will need to know the users so that he or she can design a suitable user interface and functionalities based on those specified users. Eventually, those users can just apply what they get used to doing on this new system without any learning cost.
- The designer needs to know the tasks so he or she can design various functionalities tools which are related or collaborated with the tasks. The designer can also design a good user interface for simplifying the users' approach to achieve their tasks as much as possible.
- The designer needs to know the environment in which the system will operate so he or she can design some features or gestures specific to the environment. Thus, those users can still easily use all the system functions without facing any difficulties even though they are in some critical environment.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

Examine a(n) interface/computer application/website that you are UNFAMILIAR with.

(i) Which type of user(s) does it cater for?

(you only need to state whether the interface/computer application/website is designed for novice or expert user or both)

(ii) How do you know that this is the case?

(iii) How does it make you feel as a novice user of that particular system?

(iv) How could it be improved?

Examine a(n) interface/computer application/website that you are FAMILIAR with.

(i) Which type of user(s) does it cater for?

(you only need to state whether the interface/computer application/website is designed for novice or expert user or both)

(ii) How do you know that this is the case?

(iii) How does it make you feel as a user of that particular system?

(iv) Do you have any suggestion for improvement?

Question 1

(a) Briefly explain the meaning of *cognition*.

Cognition is a mental action of interpreting and understanding the information obtained from vision, hearing and haptic senses.

(b) Some interfaces/displays are hard to interpret *(e.g. it is confusing or difficult to comprehend)*. Find 2 examples of such interface and bring it to the classroom. ***The 2 examples must be of websites/software developed by Malaysian companies only.*** Point out which part(s) of the interfaces/displays that are hard to interpret/confusing/difficult to comprehend. Explain your answer. Note: Use PowerPoint slides to show the 2 examples. Recommend how the problems can be solved.

- Shopee
    - The content displayed on the user interface of Shopee sometimes make users confused. There are too many advertisements which easily make users to accidentally click to incorrect sites.
    - The instructions given by Shopee are also unclear. So, it makes users feel complicated and difficult to reach the goals.
    - To solve the problems, Shopee should make all the content clearer with the help of visual and audio. Meanwhile, the advertisements should be optimized such as adjusting the color and size. Thus, users will not accidentally click the wrong button and being redirected to the undesired site.
- MyRAPID PULSE
    - The routes and bus statuses are not accurate even if users have reloaded it several times. This would make the users feel confused and it would be hard to indicate the location of the bus and the accuracy of route applied.
    - In order to solve the problems, MyRAPID PULSE should improve the performance of the service so that the latest content can be updated every time user reloads it.

Question 2

(a) Visit the link below and then carry out the following activities:

http://architectingusability.com/2011/05/26/using-the-gestalt-laws-of-perception-in-ui-design/

Prepare PowerPoint slides with brief notes and examples and then teach the class the following 2 laws - Law of proximity
- Law of similarity

- Law of proximity
    - Based on the law of proximity, humans will always think that the items that are located close together are considered as a single group.
    - The items in that group will be considered distinct from items located further away.
    - For example, there is a registration form shown on the screen. However, the distance between labels and text fields is so far. It may lead to misunderstanding by users; they might think the column of labels and the column of text fields are unrelated. To resolve this issue, we just need to reduce the distance between them so that users will know that they are related to each other.
- Law of similarity

- Based on the law of similarity, humans will always consider that visual items that share some property or attribute belong together. Meanwhile, the items with differing properties or attributes are perceived as belonging to different groups.
- For example, there are many objects which are not arranged properly shown on the screen. Meanwhile, there are 3 characteristics which can be found out, triangle object is always red, circle object is always green and square object is always grey. Thus, we can differentiate each type or group of objects based on their unique characteristics such as shape and color.

(b) Comment the 2 figures below in terms of its *figure(foreground)* and *ground(background)*. (hints: using your favourite browser search for the subject "**FIGURE and GROUND**" for more information).

- From the figures above, we can recognize two totally different images based on our intuition whether white or black is the figure.
- If we see the white as the figure, we will be able to find out a white vase. In contrast, we will be able to find out two faces if we see the black as the figure.
- Most people can easily switch between these two figures by changing the consideration of which color is figure or ground in their mind.
- The figures above are using high contrast colors which are black and white. These colors can lead to the perception of figure and ground. Thus, we are able to separate them into figure or ground.

(c) "For UI design, the *ground(background)* of the UI should be designed in such a way that it supports the *figure(foreground)*." Do you agree with this statement? Explain your answer.

- Yes, I agree with this statement.
- This is because an appropriate ground (background) of the UI can effectively help users to recognize the figure (foreground) which is the main content in the interfaces.
- An excellent ground (background) design can make users to easily differentiate which is the important content or unimportant content. The designer can perform this effect to the users via modifying the blurriness, contrast, size and separation of the ground (background) objects.
- For example, a blurred images or objects can easily let the users know that it is not important while clear images or objects can let the users know that it is an important content.

Question 3

(a) Identify the 3 common applications of sounds. State which 2 are the most commonly used in HCI. Give 2 examples **(*own examples*)** and elaborate your answer.

- Sounds can be used to locate things.
  - When people want to know the approximate distance of the objects without using vision, they will use their ear to listen the sound made by the objects. They can estimate the distance roughly based on the clarity and volume of the sound.
- Sounds can be used to provide feedback.

    - In Windows operating system, users can immediately hear the alert sound from the speaker when they accidentally execute the action which causes errors. This can let users know something has gone wrong and enable them to deal with the errors.
    - This can also be applied to musical instruments. When people are playing the piano, the piano will make sound once they pressed a key. Thus, people will know whether they have pressed the wrong keys.
- Sounds can be used to attract attention.
    - Emergency vehicles such as ambulances and police cars will use sirens to effectively alert other drivers on the road so that they will clear the way for emergency vehicles.
    - Mobile phones frequently use harsh or bright sound to remind users of something important such as incoming messages, calls and important notifications.

(b) Give 2 examples of systems **(*own examples*)** that should use sound for *FEEDBACK* and/or *ATTRACTING* attention but unfortunately currently it is not using it. Justify your answer.

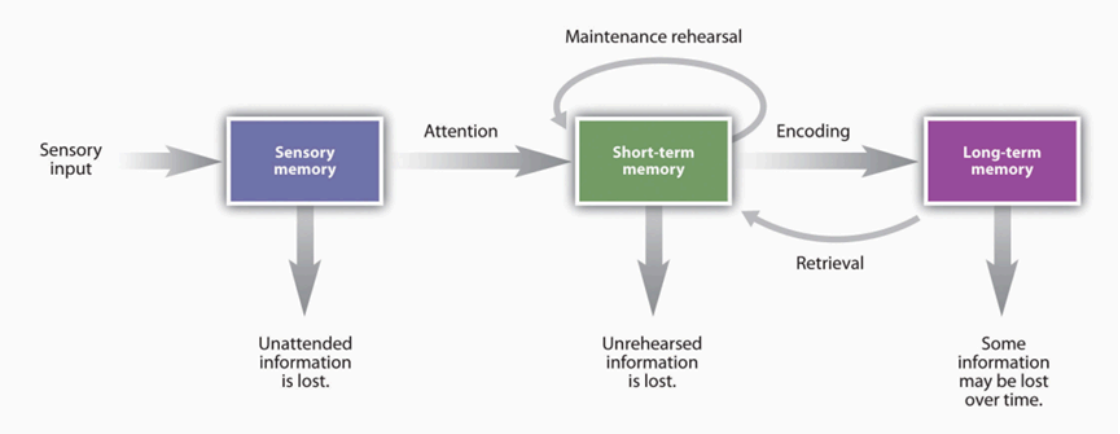
- Public toilet occupancy indicators
    - Since there are many public toilets in restaurants and shopping malls which do not have auditory feedback to detect whether the toilet is occupied, people are not able to know whether there are people inside the toilet.
    - They can only know if after they knocked on the toilet door or pushed the door. This behavior will make them feel embarrassed if there are a people inside the toilet.
- Automated checkout systems in grocery stores.
    - There are many automated checkout systems which rely on visual functions such as lights and on-screen messages to provide guidance to users.
    - However, it might make customers confused as some of the customers have illiteracy issues or cannot see.
    - This would make the whole process of items checkout complicated and slow.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

Find 2 interface/displays where the information presented are highly comprehensible, make sense and visually appealing. Point out which part(s) of the interface/displays are highly comprehensible, make sense and visually appealing. Suggest if it can be further improved.

Question 1

(a) Draw a diagram to illustrate the 3 types of human memory. Explain your answer.



Sensory memory

- Sensory memory is a short-term retention of sensory information like sights, sounds and smells.
- It has limited duration to store information, typically less than a second.
- It allows for retaining sensory impressions following the cessation停止 of the original stimulus.

Short term memory

- Short term memory is an area of memory that is able to hold limited information for a very short period of time.
- It has limited capacity.
- Information stored in short term memory can be accessed rapidly.
- Information stored in short term memory can also decay rapidly.

Long term memory

- Long term memory is an area of memory where information is stored and can be retrieved over very long period of time.
- It has infinite capacity.
- Time is needed to retrieve info stored in long term memory.
- Information stored in long term memory can become less accessible after a long period of time.

(b) Complete the table below to highlight the differences between STM and LTM.

	STM	LTM
CAPACITY	Limited	Infinite
ACCESS	Fast	Slow
DECAY	Fast	Slow

(c) According to Miller (1956), STM can hold between 5 to 9 chunks or pieces of information for a very short period of time. Based on Miller's studies on the capacity of STM, comment whether it is necessary for a designer to limit the number of items displayed in a **menu** to a maximum of 9? Give reasons for your answer.

- Yes, it is necessary for a designer to limit the number of items displayed in a menu to maximum of 9.

- This limitation can ease humans to recognize, process and memorize the information effectively. If the number of items in a menu exceeds 9 items, humans might not be able to memorize all of them even though they can still recognize and process them. It indicates that humans have to spend more time to repeatedly read back the forgotten items.

- This limitation can also maximize the time usage for humans to process and memorize the menu items. Since humans can hold between 5 to 9 pieces of information for a short period of time, the menu with 9 items could enable humans to immediately process and memorize them without forgetting anyone of them.

- When there are only 9 items displayed in a menu, humans will just need to focus on those items. Meanwhile, they can quickly make a decision whether choosing which items. If there are too many items displayed in a menu, they will need to scan through all those items at once, it may be difficult for them to make a quick decision as they have to process many items and find out the desired one at the same time.

Question 2 ***(Present your answers using PowerPoint slides)***

(a) Give 2 examples (***own examples***) of interfaces/displays where you are expected to remember more than what is reasonable. Explain your answer.

E-commerce platform product filter

- The e-commerce platform provides a lot of filter options for users to filter out their unwanted product types.
- However, sometimes there are too many filter options selected, users have to memorize what options they have chosen before. So, they will not miss out any important products.
- This issue will cause users easily forgot their selections and preferences when they are not expecting to check those selections.

Microsoft Word

- Microsoft Word has provided many features for users to make any modification on their pages.
- However, there are many complicated icons stayed together within a small area of panel. Since every icon is representing different functions, users might not be able to select their desired function immediately via checking with all icons only.
- Users might even select the wrong function as no static description is shown beside each icon.

(b) Give 2 recommendations on how interfaces/displays should be designed to avoid forcing the user to remember more than what is reasonable. Discuss whether these recommendations must be followed all the time.

Limitation at maximum 9 items at one page/section

- Based on the Miller's statement, short term memory can hold between 5 to 9 chunks or pieces of information for a very short period of time.
- This indicates that 9 items are the extreme memory for humans. If exceeding 9 items, people may easily forget anyone of the items as the short-term memory start decaying.
- Maintaining at maximum 9 items can also help people to increase the focus ability. Since memorizing 9 items are capable for most of the people, they can easily process those items and think out the right decision immediately.

Grouping all the related items

- When all the related items are grouped at a section, users may easily remember the items inside each group.
- Meanwhile, they can also quickly access their wanted items via recognizing the groups. Once the group is confirmed, they can just focus on those items inside the group and ignore the other items in other groups.

Question 3

"In HCI, mental model refers to the user's current understanding of how "something" works (e.g how a system works). Very often the user's mental model does not match with what the system actually does".

Explain the above statement by using a suitable example *(the example provided must be based on your own experience).*

- At most of the time, user's mental model is much easier and simpler than what the system actually does.

- Usually, user's mental model is originated from what the users actually see from the output of the system such as the screen display and the movement of the system. This information is not including the internal process of the system as it is invisible by users.

- It is not necessary for a general user to know how the system actually work. They just have to know how to operate the system and what is the correct output from the system. Only the system maintainers, developers and other profession workers need to understand the comprehensive process of the system.

- Although the comprehensive operation of a system is more difficult than user's mental model, users can still able to use the system based on their mental model.

- For example, a user wants to open Visual Studio Code from his computer with Windows 11 operating system. The user just has to know how to open the Visual Studio Code and what will be the output from system. This is sufficient for him to access the functionalities provided by the Visual Studio Code. He does not need to clearly know how many resources are distributed to the program or how the monitor receives the signal from the computer and display the output.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

The understanding of human mental capability and limitation enable designer to create more usable systems. Suggest some of the guidelines of UI design related to the studies of human mental capability and give an example for each of the principle.

Examine one of your favourite and not so favourite applications. What sort of demands do they make upon you as a user? Are you expected to REMEMBER more than what is reasonable? Discuss.

“Memory and learning are closely linked and it is important to consider the ways in which people learn if effective human-computer systems are to be constructed.” Comment on the statement above and explain how studies of HCI contribute to human learning.

Question 1

One of the Shneiderman's 8 golden rules of interface design is *"Strive for consistency"*.

(a) Explain what this golden rule means.

This golden rule means the consistent sequences of actions should be required in similar situations; identical terminology should be used in prompts, menus and help screens.

(b) Explain what you or your group **must do** in order to apply this guideline to your HCI assignment (i.e. your HCI assignment's prototype).

I will apply this guideline to my HCI assignment WeChat application system by inheriting the sequences design of the previous version of the system on the bottom menu bar which has "Chats", "Contacts", "Discover" and "Me" tabs.

Question 2

(a) Explain in details the good things and the bad things about the *Shneiderman's 8 golden rules* of interface design.

Pros:

- Users can easily operate the system or application based on their previous experiences of using other system or application.
- Users are able to receive the useful response immediately after making any action within the system so they can be acknowledged about the next steps they are required to do.
- The golden rules of interface design can also reduce the memory load of users' short-term memory. It only displays limited amount of information at minimum 5 and maximum 9 items to maximize the efficiency of human's short-term memory but not overuse or cause loads.

Cons:

- It is difficult to fulfil the consistency of system design pattern when adapting the advancing of users' needs.
- It might make users feeling annoying when there are too many informative feedbacks provided after each action performed.
- It might affect users' feelings or mood when there are frequent error messages popped out on the system user interface if users made errors.

(b) In your opinion are these UI design guidelines useful to software developers? Justify your answer.

- Yes, these UI design guidelines are useful to software developers.
- Users are not required to learn how to use the system from the beginning if applying these UI design guidelines on the system development. They can just use it based on their previous experiences of using other applications. Meanwhile, the learning cost will be low.
- The software developers can easily develop a system or an application which can adapt to nowadays users' behavior. They are not required to create a totally new design when they also need to consider users' experiences.
- Via referring to these UI design guidelines, it is easy for software developers to fulfil the satisfaction of the users. This is because they can immediately be familiar to the application using their general knowledges and common senses.

Question 3 ***(Present your answers using PowerPoint slides)***

(a) Download and read the article "*The Case Against User Interface Consistency*" by Jonathan Grudin. (read pages 1164-1167 is enough).

https://www.microsoft.com/en-us/research/publication/case-user-interface-consistency/

Based on the above article, mention an **example of one of the best designs that violate the guideline "*consistency*"**. Explain your answer.

Numeric keypad layout

- The proposed design placed the arithmetic operations (+, -, *, /) across the top row.
- However, this layout was difficult to use because it will maximize hand movement.
- Thus, the best design placed the + key directly above the Enter key which can minimize the finger movement and error even though it was not consistent with the order that we learn or memorize.

(b) Give an example **(own example)** of a good UI design that violate the guideline **"***consistency***"**. Explain your answer.

- Usually, most of the application will use progress bar to show the progress of the operation.
- However, it is boring and it cannot bring a "wow" to the users.
- Thus, we can use an interactive progress graphics to display the progress. It is not necessary to be a "bar" to show the progress. It can also be a human who is running towards a goal.
- Users can see and feel something different; they will also likely stay in the current page to interact with the progress detail page.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

Question 4 *(AACS5194(B) - 06/07 April/May Exam)*
Suggest one situation where it is impossible to provide a consistent user interface.

Question 5 *(AACS5194(A) - 06/07September Exam)*
Comment on how the Shneiderman's 8 golden rules of interface design may be used in the HCI design process.

Question 1 ***(Present your answers using PowerPoint slides)***

(a) Susie is a new programmer working with you in a software house. She would like to know how to use colours effectively for screen output. Give her some guidelines that might be useful to her. For each guideline, give an example (**own example**) to convince her.

(b) You have been asked to help in the development of an online Stocks System. **Table 1** below shows some of the important information that must be published on the main page i.e. the most active stocks for a particular trading day. Your software manager would like to seek your advice on how to use proper colours to enhance the usability of the Stocks System.

Table 1: Most Active Stocks

Stock Code	Name	Volume	Changes
8200	GENETECH	2,500,000	+1.60
0028	AIR COMMUNICATION	1,200,000	+0.80
5303	IRIS	900,000	0.00
5088	YXL	80,000	0.00
7110	CHEE KEE	60,000	-1.50

Required:

Demonstrate how you may apply colours to the information given in Table 1 to enhance the usability of the Stocks System. Justify the choice of colours used.

Question 2 ***(Present your answers using PowerPoint slides)***

(a) Find any 5 artefacts *(e.g. signboard, signage, announcement on noticeboard, etc*) in your campus. Take picture of the artefacts and insert them into PPT slides. Analyse the color(s) used and based on what you have learned in HCI, comment whether the color(s) used is good or poor. Give reasons to support your answer.

(b) Explain what *closure* means.

(c) *"Closure requires feedback"*. Do you agree with the above statement? Explain your answer by using one suitable example (***own example***). In addition, discuss the consequences where there is little or no feedback provided.

Question 3 *(Present your answers using PowerPoint slides)*

According to Nielsen (2001), good error messages are *Explicit, Human Readable, Polite, Precise* and *Constructive.*

(a) Give 2 examples (**own examples**) of error messages that conform to some or all of above characteristics. State the source of your answers.

(b) Differentiate between a mistake and a slip. Give an example (**own example**) of each. Suggest how both (mistake and slip) can be avoided.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

Question 4 - Discuss one important factor that a designer should take into account when designing error messages for games.

Question 5 - Describe the characteristics of good error messages.

HCI, T6, Techniques To Draw The User's Attention and Error Messages

Question 6 - Call to action in web design — and in user experience (UX) in particular — is a term used for elements in a web page that solicit an action from the user. The most popular manifestation of call to action in web interfaces comes in the form of clickable buttons that when clicked, perform an action (e.g. "Buy this now!") or lead to a web page with additional information (e.g. "Learn more…") that asks the user to take action. Discuss some of the techniques to draw users' attention and lead them to call to action.

Question 7 ***(present your answer using PowerPoint slides)***

Colour if used appropriately can make an interface pleasant and enjoyable to look at. Common applications of colour includes:

- highlight differences between information
- draw attention
- indicate status

Give 2 examples for each of the above. You may search the Internet or your Windows OS to find the required examples. Comment on the color used.

Question 1

(a) Explain the following keyboard layouts:

- QWERTY
- DVORAK

(b) *Computer keyboard* layout followed *typewriter keyboard* layout. Why?

(c) Describe 2 situations in which *keyboard* might be preferred over *speech* for data entry/issuing command. Briefly explain your answer.

Question 2

(a) Describe 2 situations in which *speech* might be preferred over *keyboard* for data entry/issuing command. Briefly explain your answer.

(b) Explain why thermal printer is a better choice for ATM machines.

Question 3 ***(Present your answers using PowerPoint slides)***

(a) *"If a fill-in form have both text entry fields and multiple-choice selection fields then each input type should be grouped together."*

Do you agree with the above statement? Give reasons and an example (**own example**) to support your answer.

(b) Watch https://www.youtube.com/watch?v=jbV5dGvJWyo

Based on the video, list some of the common sense things that you should do to avoid neck, shoulder, arm and leg pains as well as eyestrains when using a computer. In other words, give advice on how to avoid health problems when using a computer.

(c) Find a similar video in youtube and **share** it with everyone in the class.

Video title: _____

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

A PC usually equipped with a QWERTY keyboard, a mouse and a VDU. Would these be satisfactory interactional devices? What other input and/or output devices might be needed and why? (You may use a scenario or make an assumption to support your answer)

Discuss the types of input and output devices that you would use for the following system. For each system, indicate why the conventional keyboard, mouse and computer screen may be less suitable. (You should do some research to answer this question).

(a) Global Positioning System (GPS)
(b) Automated Teller Machine (ATM)
(c) Tourist information system

Question 1

A common form of interaction is through the use of menus. Discuss this form of interaction in terms of:

(a) General advantages and disadvantages of menus (give 2 advantages and 2 disadvantages of menus)

(b) List all the ways of ordering/organising menu items. For each way give an example (**own example**) to support your answer.

(c) Do some research to find out other possible ways/choices of ordering menu items. List out those ways/choices not covered in the lecture. Explain your answer.

Question 2 ***(Present your answers using PowerPoint slides)***

(a) Linda is a new programmer working with you in a software development company. She requested assistance from you to give her some advice on how to design an effective form. Write 5 design guidelines for fill-in form that you think might help her. Explain your answer.

(b) Find a fill-in form (onscreen or paper fill-in form) which you think is well designed and another one which you think is poorly designed. Share with the class both forms during tutorial. Explain your answer.

Question 3

Based on what you have learned in HCI, design a new *examination attendance slip* to replace the existing one. The examination attendance slip must contain the following fields:

Seat no, Index no (in words), Index no (in figures), Paper examined (as printed on the exam paper), Date of examination, Time of examination, Signature.

Show how it would appear on paper and briefly explain the rationale of your design.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

"Mobile devices required different menu design"

Comment on the above statement. Discuss some of the interaction styles and highlight some design considerations of menu design on mobile devices.

Question 1

(a) In the context of HCI, explain the meaning of evaluation. Give 3 reasons why it is important to evaluate systems.

(b) What are the methods that a designer can use to evaluate the usability of a product/system/software?

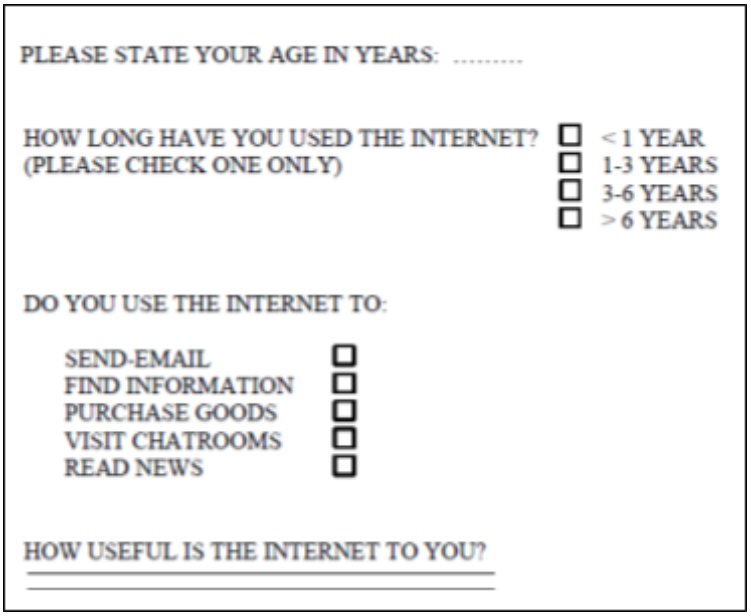
Question 2

(a) In HCI, questionnaires have long been used to evaluate user interfaces. Discuss 2 advantages and 2 disadvantages of using questionnaires as a technique of evaluation.

(b) One of the issues of using questionnaires is poor returned rates. Suggest 2 solutions to overcome this problem.

Question 3

(a) Analyse the questionnaire given below and then redesign the questionnaire to improve it. You must show at least 4 improvements in your answer. Give reasons for your answer. *(Note: Do NOT change the last question i.e. let it be an open question)*


PLEASE STATE YOUR AGE IN YEARS: .....

HOW LONG HAVE YOU USED THE INTERNET? (PLEASE CHECK ONE ONLY)
- ☐ < 1 YEAR
- ☐ 1-3 YEARS
- ☐ 3-6 YEARS
- ☐ > 6 YEARS

DO YOU USE THE INTERNET TO:

- SEND-EMAIL ☐
- FIND INFORMATION ☐
- PURCHASE GOODS ☐
- VISIT CHATROOMS ☐
- READ NEWS ☐

HOW USEFUL IS THE INTERNET TO YOU?

(b) Suggest a cost effective way to evaluate the usability of the Google Classroom. Justify your answer. Include also in your answer the steps to be followed to carry out the evaluation.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)

List the guidelines for designing questionnaire.

Question 1
Experts (UI/HCI Specialists) can be involved in the design of user interfaces.

(a) Explain how they can help developers to produce better user interfaces.

(b) Evaluate the advantages and disadvantages of involving experts?

Question 2
Many large software development companies have usability laboratories to test their software.

(a) Discuss the pros and cons of testing software in a usability laboratory.

(b) How many tester(s) is/are needed for the first test and subsequent tests. Give reason for each of your answers.

Question 3
(a) Compare and contrast between *field studies* and *usability testing in a usability laboratory.*

(b) For field studies, what do you think are the right things to do in order to minimise the *Hawthorne/Observer Effect*?

(c) Fill-in the empty cells for the table below:

Evaluation and testing	**Techniques**
(1) with users involvement	
(2) without users involvement	

Question 1 (Present your answers using PowerPoint slides)

(a) Explain how usability measurements can be beneficial to both developers and customers.

(b) What are the ways of measuring software usability?

(c) Suggest suitable way(s) to measure the usability of your HCI assignment's prototype. Justify your choice(s).

Question 2 (Present your answers using PowerPoint slides)

(a) What are the benefits of making the working environment ergonomically correct?

(b) Describe the negative impact to workers as a result of a poorly designed working environment while at the same time they have to use a computer over a long period of time**.**

(c) Using your favourite browser search for "Google Office". Create about 10-20 slides to illustrate the working environments in Google.Com. Include also some photos of working environments in 3 other companies for comparison purposes (one of them must be own your place of study). Explain your answer.

Question 3 (Present your answers using PowerPoint slides)

(a) The followings are important factors that need to be taken into account in order to create an ideal/wholesome working environment.

- Proper desks and chairs
- Adequate lighting
- Low noise level
- Temperature (15°C to 22°C)

Give reason(s) why each of the above factor is important to the office workers.

(b) Give one example (**own example**) of an incorrect sitting posture. Explain your answer.

(c) Give one example (**own example**) of a correct sitting posture. Explain your answer.
Note: For Q3(b) and Q3(c), search the Internet/textbook for the required answers.

Additional questions (on your own, i.e. questions below will not be discussed during tutorial)
Question 1
(a) Do you agree that the introduction of computers can cause some of the followings?
- Stress and anxiety - Fear of unemployment - Loss of responsibility - Inadequacy - Lack of privacy - Alienation - System failures - Deterioration of self image
(b) Discuss how the above problems can be mitigated. Question 2
What is RSI and why is it an increasing problem for the computer users? Question 3
You have been requested to produce a leaflet to show what a good typing posture looks like. Sketch a first version of this leaflet with textual explanation indicating what a good posture should looks like

- End -