

H2 Computing Theory Worksheet – T1W1 – L4 – Interacting with Computers (M2.1)

- 1 A car insurance company allows customers to insure their car using one of the two methods:
- method A: by using the Internet or
 - method B: by using the telephone to talk to a sales representative

The sales representative enters information provided by new customers into the computer system using a graphical user interface. Some of the information required includes:

- customer salutation
- customer name and address
- customer gender
- car registration number

For this application design a simple screen layout which makes use of appropriate graphical user interface controls.

[3 marks]

2013 Specimen Paper 2 – Question 2

- 2 A bank offers two types of electronic banking services to its customers:
- Internet banking through its online website
 - mobile banking through a native application downloaded and installed on a smartphone

To strengthen the security of the system and protect the privacy of its customers, a 6-digit PIN is randomly generated and sent to a user's smartphone every time a user logs in to access his/her account. The user has to enter his/her username and password, together with the PIN within a short time period to gain access to the system.

One common transaction performed by bank customers is to transfer funds from one bank account to another. The information required will be:

- sender bank account number
- recipient bank account number
- transfer amount
- transaction comments

Design and justify a simple usable graphical user interface to perform a fund transfer transaction using mobile banking. You may assume that a customer may have more than one account with the bank.

[4 marks]

2013 DHS Prelim Paper 2 – Question 2

- 3** A newly opened clinic has engaged a programmer to design a new online system to store patient data and medical history. Some of the information required includes:

- Patient salutation
- Patient name and address
- Patient gender
- Patient home telephone
- Patient mobile
- Next of kin [Name]
- A brief write up on the patient's medical history

(a) For this application design a screen layout which makes use of appropriate graphical user interface controls.

[3 marks]

(b) Provide a brief explanation on the key elements in screen layout and why do you use them?

[2 marks]

(c) In recent we have seen a wide spread of a new generation of interfaces in many devices. Namely, Gesture Interface and Natural language interface.

(i) Briefly describe both interfaces.

[4 marks]

(ii) What are the strength of these interfaces as compared to the more traditional kind of interfaces such as command line and graphical user interface?

[3 marks]

2013 HCI Prelim Paper 2 – Question 1

- 4** The sales representative enters information provided by new customers into the computer system using a graphical user interface. Some of the information required includes:

- customer's salutation (e.g. Dr., Mr., Ms, Mrs, Mdm...)
- customer name and address
- customer gender (e.g. F or M)
- mobile number

For this application design a simple screen layout which makes use of appropriate graphical user interface controls.

[3 marks]

2013 PJC Prelim Paper 2 – Question 7

- 5 A network manager for a sales company types the following into his computer:

```
copy C:\monthllysales\*.dat E:\backup\junesales /V
```

- (a) State the type of user interface being used.

[1 mark]

- (b) Describe, using the example, two benefits of the user interface named in (a).

[4 marks]

The network manager has a disabled user who cannot use a keyboard but can control a point-and-click device that moves a pointer on the screen.

- (c) Describe a user interface that would allow this user to enter text into a word processor.

[3 marks]

- (d) The sales company provides a special user interface for this user. State **two** benefits to the company.

[2 marks]

2014 A-level Paper 2 – Question 3

- 6 Hwa Chong has partnered with Q&M to set up a dental clinic in the Campus. The clinic will have a few dentists to serve the student population. The clinic will also have an on-line system for students to make appointment with dentist. You are task to design the on-line system to handle all student appointments.

Besides the data design, the user interface is an important factor in determining the success of the HC dental system. The graphical user interface for students to make an appointment using their desktops/laptops must be intuitive and usable.

- (a) Describe 3 design principles that will guide you in designing your interfaces. Give specific examples on how you will incorporate it into your user interface design for the HC dental system.

[6 marks]

- (b) Design the user-interfaces for the following features:

- (i) On-line appointment booking

[3 marks]

- (ii) Updating of students particulars

[3 marks]

- (c) Part of the future enhancement of the system is to allow a multimodal interaction between the user and the system. A multimodal human-computer interaction usually involves the 5 human senses and enables a more free and natural communication. Suggest 2 realistic possibilities for such an enhancement. Your suggestions should include a brief description of how it works in this context.

[4 marks]

2014 HCI Prelim Paper 2 – Question 1

- 7** Pioneer Book Store sells books online and charges for delivery. Its delivery charges for orders less than \$200 are as follows:
- If the number of items is 3 or less, delivery by next day will be charged at \$30, while standard delivery will be charged at \$2 per item.
 - If the number of items is 4 or more, delivery by next day will be charged at \$5 per item, while standard delivery is free.

For orders more than \$200, standard delivery is free for any number of items, while delivery by next day will be charged at \$5 per item.

Customers can view a catalogue of books and order from its website. Payment is made by the customer forwarding their credit card details, which are processed immediately. Details of the orders are matched against the stock file to check for availability of items before packing lists are produced and sent to the packing department.

New customers have to register with the online book store from its website before they can make any orders.

Design a suitable user interface for a new customer to register with the online book store, showing its possible contents in terms of options presented to the user, justifying your design.

[4 marks]

2014 PJC Prelim Paper 2 – Question 5

- 8** A durian specialty business sells its different breeds of durians via two modes currently:
- phone order via calling in to its sales hotline
 - web order via making an online order on its website

For phone order, a sales agent will record the order details (breed, quantity, customer name, and phone number). Payment terms will be cash on collection only.

For web order, the customer will register for an account using his/her email address and select the breed and quantity, and enter his/her phone number.

Payment terms will be either cash on collection or by entering credit card details upon checkout.

To cater to an aging population and elderly who face difficulty using smartphones, it is proposed that an SMS application be developed to allow elderly to order durians using SMS. Design and justify a suitable user interface and workflow. Assume that the SMS sales number is 88387426 (88DURIAN).

[3 marks]

2015 DHS Prelim Paper 2 – Question 4

- 9 (a)** What do you understand by the usability of a user interface?

[3 marks]

(b) Handheld mobile devices have become increasingly prevalent. Shneiderman's "Golden Rules of Interface Design" have existed for some time now. Making use of the "Golden Rules" as a starting point, grounded in previous research studies proposes a set of guidelines for mobile device interface design. Clear explanation needed to articulate your guidelines. Use examples if necessary to illustrate your point.

[9 marks]

2015 HCI Prelim Paper 2 – Question 1

- 10** A computer system is to be used to monitor the condition of patients in a ward of a hospital. The computer system can help to identify the patient, monitor the respiratory rate, heart rate, blood pressure and temperature, and administer the medicine and its dosage.

(a) Describe two input devices for such a computer system and how they can be used by the user.

[4 marks]

(b) Describe two outputs of the system, and give reasons why they are useful.

[4 marks]

(c) Describe the effects on the jobs of the nursing staff by the introduction of such a computerised system.

[2 marks]

2015 PJC Prelim Paper 2 – Question 6

- 11** A firm hires vehicles to customers. A customer usually makes a booking a number of weeks before the start of the hire period. The customer pays a deposit at the time of the booking and the balance when they return the vehicle from hire.

At the time of the booking, the firm records the following data:

- customer data, including a customer reference code
- booking date
- hire start date
- hire return date
- type of vehicle
- deposit taken

Vehicle types are coded as follows:

- Small car – SC
- Large car – LC
- Utility vehicle – UV

Each vehicle has a unique registration.

Customers may make more than one booking. The software will not allow a customer to make more than one booking for the same start date.

The document below is an example of an invoice printed for the customer when they return the vehicle and pay the balance due.

INVOICE				
Yi Ling Tan 12 The Street The District 753352				
Customer Reference:		TAN60876		
Booking Date:		13/06/2016		
Vehicle registration:		5BFE3571H		
Vehicle type:		UV		
Start date	Return date	Days charged	Vehicle rate	
21/07/2016	28/07/2016	8	\$ 85.50	\$ 684.00
Deposit Paid:				\$ 100.00
Amount Due:				\$ 584.00

The firm implements a relational database using a Database Management System (DBMS). It writes programs to access the data using a Graphical User Interface (GUI).

One program is for recording a new booking.

The firm uses different types of components in a GUI for the display and entry of data.

Name **three** types of component that the booking form could use and give the types of data it is used to capture.

[3 marks]

2016 A-level Paper 2 – Question 2

- 12 (a)** Using the 3 design principle you have learnt in class to assess the interfaces between IOS and Android for mobile. Redraw and complete the table with your points. You may draw user interfaces to illustrate your point.

[15 marks]

Design Principals	IOS	Android
Principal 1		
Principal 2		
Principal 3		

- (b)** From the table above, draw a brief conclusion on the usability of the above platforms.

[3 marks]

2016 HCI Prelim Paper 2 – Question 5

- 13** An operating system provides a user interface to a computer system.

Describe two different types of interface that an operating system provides.

[4 marks]

2016 PJC Prelim Paper 2 – Question 5