General Certificate of Education
Advanced Subsidiary Examination
June 2014

Computing COMP1/PM

Unit 1 Problem Solving, Programming, Data Representation and Practical Exercise

Preliminary Material

To be opened and issued to candidates on or after **Saturday 1 March 2014**, subject to the instructions given in the Teachers' Notes (COMP1/TN).

A

Information

- This Preliminary Material comprises Instructions for Candidates and a Data File.
- A Skeleton Program is provided separately by your teacher and must be read in conjunction with this Preliminary Material.
- Candidates are advised to familiarise themselves with the Preliminary Material and Skeleton Program before the examination.
- Another copy of this Preliminary Material will be made available to you in the examination. You will also be given access to the Skeleton Program and Data File electronically at the start of the examination. You must **not** take any copy of the Preliminary Material, Skeleton Program or any other material into the examination room.

INSTRUCTIONS FOR CANDIDATES

The question paper is divided into four sections and a recommendation is given to candidates as to how long to spend on each section. Below are the recommended timings for the 2014 examination.

SECTION A
You are advised to spend no more than **35 minutes** on this section.
Questions will examine the specification content **not** specific to the **Preliminary Material.**

SECTION B
You are advised to spend no more than **20 minutes** on this section.
You will be asked to create a new program **not** related to the **Preliminary Material** or **Skeleton Program**.

SECTION C
You are advised to spend no more than **10 minutes** on this section.
Questions will refer to the **Preliminary Material** and the **Skeleton Program**, but will not require programming.

SECTION D
You are advised to spend no more than **55 minutes** on this section.
Questions will use the **Skeleton Program** and the **Preliminary Material** and may require the **Data File** named **deck.txt**.

This **Data File** must **not** be altered in any way prior to the examination.

Electronic Answer Document

Answers for all questions for all sections must be entered into the word processed document made available to the candidate at the start of the examination and referred to in the question paper rubrics as the **Electronic Answer Document**.

Preparation for the Examination

For your programming language you should ensure that you are familiar with this **Preliminary Material** and the **Skeleton Program**.

Card Predict

The **Skeleton Program** in this Preliminary Material is a program for the one-player game "Card Predict".

To play the game "Card Predict" a standard deck of playing cards is used. There are 52 cards in a standard deck. Each card has a suit (spades, hearts, diamonds or clubs) and a rank (Ace, a value between two and ten, Jack, Queen or King).

At the start of the game, the deck is shuffled so that the cards are in a random order. All the cards in the deck are placed face down in a single pile. This means that the player cannot see the rank or suit of any of the cards and does not know which order the cards are in. The top card of the deck is turned over and placed next to the deck so that the player can see the suit and the rank of this card.

The player then predicts whether the next card (the card now at the top of the deck) will be higher than the card they can see. A card is higher than another card if it has a higher rank. **Table 1** shows the rank order of cards (from lowest to highest).

Table 1

Ace
2
3
4
5
6
7
8
9
10
Jack
Queen
King

The top card from the deck is now turned over and placed on the top of the previous card taken from the deck. If the player's prediction was correct then the game continues and they take another turn. If the player's prediction was wrong then the game finishes and the player works out their final score by counting the number of cards that they have predicted correctly. The player's final score will be a number between 0 and 51. If the player's first prediction is wrong then their final score is 0. The aim of the game is to try and achieve the highest possible number of correct predictions.

Figure 1 shows the stages for an example play of the game "Card Predict", where the deck of cards is in the same order as the deck stored in the **Data File** named **deck.txt**.

The preliminary material continues on the next page

Figure 1

At the start of the game, all the cards in the deck are placed face down in a single pile.

The top card of the deck is turned over and placed next to the deck so that the player can see the suit and the rank of the card. In this example game, the first card is the Ace of Clubs. The player's score is 0.

The player then predicts whether the next card (the card now at the top of the deck) will be higher than the card they can see. In this example game, the player predicts that the next card will be higher than the Ace of Clubs.

The top card from the deck is now turned over and placed on the top of the previous card taken from the deck. In this example game, the next card is the Two of Hearts.

The player's prediction was correct (the Two of Hearts is higher than the Ace of Clubs) so the player's score increases to 1. The player has another turn and is asked to predict whether the next card will be higher than the Two of Hearts. In this example game, the player predicts that the next card will be higher than the Two of Hearts.

The top card from the deck is now turned over and placed on the top of the previous card taken from the deck. In this example game, the next card is the Two of Diamonds.

The player's prediction was wrong (the Two of Diamonds is not higher than the Two of Hearts) so the game is over. The player's final score for this game was 1.

The Skeleton Program

In the **Skeleton Program** there is a menu containing four options.

The first two options on the menu allow the user to play the game "Card Predict". If the user selects option 1 they will play the game "Card Predict" after the deck has been shuffled (the cards put into a random order). If the user selects option 2 then they will play the game "Card Predict" without shuffling the deck first (the cards in the deck will be kept in the same order as they are stored in the **Data File** named **deck.txt**).

The next two options on the menu are about the recent scores. The **Skeleton Program** stores details about recently completed games of "Card Predict". If option 3 is selected then the user will be shown the scores for the last three completed games of "Card Predict" – alongside the name of the player(s) who completed these three games. If option 4 is selected then the details of the recently completed games will be reset to default values.

The user can enter a q at the menu to quit the program.

A copy of the contents of the **Data File deck.txt** can be found at the end of this preliminary material. The **Data File** contains 104 lines with one number stored on each line. In the **Data File** each card is represented by two numbers. The first number denotes the suit of the card (1 – clubs, 2 – diamonds, 3 – hearts, 4 – spades) and the second number denotes the rank of the card (1 – Ace … 11 – Jack, 12 – Queen, 13 – King, see **Table 1**).

Notes

Your chosen programming language may use arrays with a lower bound value of `0`. If so, array cells with indices of `0` are not used.

The preliminary material continues on the next page

The Data File

```
1
1
3
2
2
2
4
2
1
3
2
3
1
4
1
6
1
5
3
4
3
5
3
6
3
7
3
8
2
12
3
9
4
4
4
5
4
6
4
7
2
13
4
8
4
9
4
10
4
11
4
12
3
```

```
10
3
11
3
12
1
7
1
8
1
9
2
1
2
4
2
5
2
6
2
7
1
10
1
11
1
12
1
13
2
8
2
9
2
10
2
11
3
1
3
3
3
13
4
1
1
2
4
3
4
13
```

The **Data File** named **deck.txt** will be available to you at the start of the examination.

END OF PRELIMINARY MATERIAL

There are no questions printed on this page