

Level 3 Advanced Technical Extended Diploma in Digital Technologies (720)

Level 3 Digital Technologies (Application Development) – Theory exam (2)

If provided, stick your candidate barcode label here.

Thursday 1 March 2018
09:30 – 12:00

Candidate name (first, last)

[illegible][illegible]

Candidate enrolment number

Date of birth (DDMMYYYY)

Gender (M/F)

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Assessment date (DDMMYYYY)

Centre number

Candidate signature and declaration*

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- If any additional answer sheets are used, enter the additional number of pages in this box. 

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- Please ensure that you **staple** additional answer sheets to the **back** of this answer booklet, clearly labelling them with your full name, enrolment number, centre number and qualification number in BLOCK CAPITALS.
- All candidates need to use a **black/blue pen**. **Do not** use a pencil or gel pen.
- If provided with source documents, these documents **will not** be returned to City & Guilds, and will be shredded. **Do not** write on the source documents.

***I declare that I had no prior knowledge of the questions in this assessment and that I will not divulge to any person any information about the questions.**

General instructions

- Use black or blue ball-point pen.
- The marks for questions are shown in brackets.
- Answer **all** questions.
- Answer the questions in the spaces provided. Answers written in margins or on blank pages will **not** be marked.
- Cross through any work you do not want to be marked.
- Write all your working out and answers in this booklet.

- 1 a) State **four** requirements that should be considered when developing software applications.

(4 marks)

- b) Explain what should be considered for **two** of the requirements stated in Question 1 a).

(4 marks)

- 2 a) State **two** analytical tools used when documenting the feasibility of a project. (2 marks)

- b) Explain the purpose of each of the **two** tools stated in Question 2a). (4 marks)

- 3 Describe the operation of **three** Systems Life Cycle models that are appropriate for the development of Application Software. (6 marks)

- 4 a) Explain the difference between a 'method' and a 'function' when used in programming.

(2 marks)

- b) Explain how **each** of the following functions are used.

- Pre-defined library functions
- Coded

(4 marks)

- 5 State the types of data values that may be stored in the following data types.

- String
- Boolean

(2 marks)

6

- Polymorphism
- Inheritance
- Encapsulation

(6 marks)

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7

(2 marks)

8

(2 marks)

9 Describe the purpose of the following test types.

- Alpha Testing
- Beta Testing

(4 marks)

10 Explain the purpose of a 'Test Log'.

(2 marks)

- 11 a) State **two** areas covered in a project review. (2 marks)

- b) Explain what content should be included in **each** of the areas stated in Question 11 a). (4 marks)

(6 marks)

- [illegible]

(2 marks)

(2 marks)

15 Explain what is meant by the use of indentation in code.

(2 marks)

- 16 A function in a program finds Forenames in a document and creates a string with all the Forenames found concatenated into a single string. Each Forename in the string is separated by a comma character and a space character except for the last Forename found, which only has a comma added.

The case you will consider is this output string from the program function:
"Mary, Jim, Samir, Helen, Sarah, Bradley,"

The following code is used to work with the output string:

```
1  nameString = "Mary, Jim, Samir, Helen, Sarah, Bradley,"
2
3  INTEGER i, j, k, m
4
5  j = LENGTH(nameString)
6
7  FOR i = 1 to j
8      If nameString[i] == " " THEN
9          k = k + 1
10         ENDIF
11 NEXT i
12
13 PRINT k
14
15 INTEGER[] array = NEW INTEGER[k]
16
17 m = 0
18
19 FOR i = 1 to j
20     IF nameString[i] = " " THEN
21         array[m] = i
22         m = m + 1
23     ENDIF
24 NEXT i
```

- a) What value is assigned to variable **j** in line 5? (1 mark)

- b) What value is assigned to variable **k** in line 13? (1 mark)

- c) Make a change to a single line of code above so that the number of Forenames in the list is outputted. State which line is changed. (1 mark)



d) What is the purpose of the code in lines 15 to 24 inclusive?

(3 marks)

e) Re-write the code in lines 7 to 11 inclusive to use a **DO ... WHILE** looping construct instead of the existing **FOR** loop construct.

(3 marks)

(Total marks 9)



- The following is an example of its use:

```
1 newString = STRINGPART("Giusy", 2, 4)
2 PRINT newString
```

The function can also work with negative `endPosition` values to work backwards in the `inputString` value.

Discuss how you would create an algorithm that would work with the string “**Mary, Jim, Samir, Helen, Sarah, Bradley,**” to find each Forename and assign each string value found to a separate element of a string array.

For the string above, the output array would be structured as follows:

Mary
Jim
Samir
Helen
Sarah
Bradley

(9 marks)

[illegible]

Question 17 continued
