# End of Unit Quiz – Unit 2.3 Producing robust programs

**ai.** Maintainability of code allows a team of Programmers to work effectively. One way of improving maintainability of code is to use comments. What is meant by using comments in code?

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**aii.** Explain using an example why you should use comments in code.

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**bi.** Another way of improving maintainability of code is to use indentation. What is meant by indentation?

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**bii.** Why should you use indentation? Give an example.

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* 1. Why is it important that a business has robust validation on their registration web page?

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* 1. What are **two** examples of validation that a business can implement on their registration page?

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The program below outputs the correct size of football for a certain age using the information from the table. The program should also output the circumference and weight.

|  |  |  |  |
| --- | --- | --- | --- |
| **Age** | **Circumference (cm)** | **Weight (g)** | **Size** |
| <8 | 58 | 311 | 3 |
| 9-11 | 64 | 369 | 4 |
| 12+ | 70 | 425 | 5 |

|  |  |  |
| --- | --- | --- |
|  | 01 Input age  02 Select age  03 Case Is >12  04 Size=5  05 Weight=311  06 Circumference=58  07 Case Is >8 AND <=11  08 Size=4  09 Weight=369  10 Circumference=64  11 Case Is <=8  12 Size=3  13 Weight=311  14 Circumference=58  15 End Select  **16** Ball\_Info=”The correct size is:” & ” “ & size & “ “ & “With a Circumference of” & Circumference & “ “ \_& “and a weight of” & “ “ & weight &”.”  17 OUTPUT BallInfo |  |

**ai.** What line is the Syntax error is on?

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|  |

**aii.** Justify your answer for (ai).

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|  |

**bi.** What line is the Logic error on?

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**bii.** Justify your answer for (bi).

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1. What is the purpose of testing?

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* 1. How could a software company use iterative testing to develop an app?

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* 1. How could the software company use final testing to develop the product?

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1. Complete the definitions for the types of testing below:

|  |  |
| --- | --- |
| **Test Data** | **Reason for use** |
| Valid data |  |
| Invalid data |  |
| Borderline data |  |

1. John has to write a program to convert exam marks out of 100 to a Grade.

A=80+, B=70-79, C=60-69, D=50-59, E=40-49, F=30-39, G=20-29, U=0-19

Complete the table below by stating the marks to be tested, the reason for test and the expected outcome. The first row has been completed for you.

|  |  |  |
| --- | --- | --- |
| **Test Data** | **Reason for test** | **Expected outcome** |
| Mark 78 | Test a valid input between 0-100 to check the correct grade is output. | B |
| Mark…… |  |  |
| Mark…… |  |  |

**8.** When designing computer systems it is important to plan for contingencies. This is very important because it will allow developers to account for situations that were not planned.

What are two situations that might occur and what contingency could be planned to account for them?

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|  |

1. Software can be misused in a number of ways. The table below lists statements that state acceptable use or software misuse. Tick **one** box in each row to show which use applies.

|  |  |  |
| --- | --- | --- |
| **Use** | **Acceptable Use** | **Software Misuse** |
| Making a copy of licensed software to give to a friend. |  |  |
| Changing the default settings to suit your personal needs. |  |  |
| Copying company data onto a secondary storage device |  |  |
| Using somebody else’s login details |  |  |
| Using the help feature |  |  |
| Sending spam emails to market a product |  |  |

**10.** What are **two** ways that software companies can design computer systems to prevent software misuse?

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1. The simplified diagram below shows how a user’s login credentials are dealt with by a computer system.

Complete the diagram by filling in the blanks using letters from the phrases words below.

A - Approves login request

B - Client

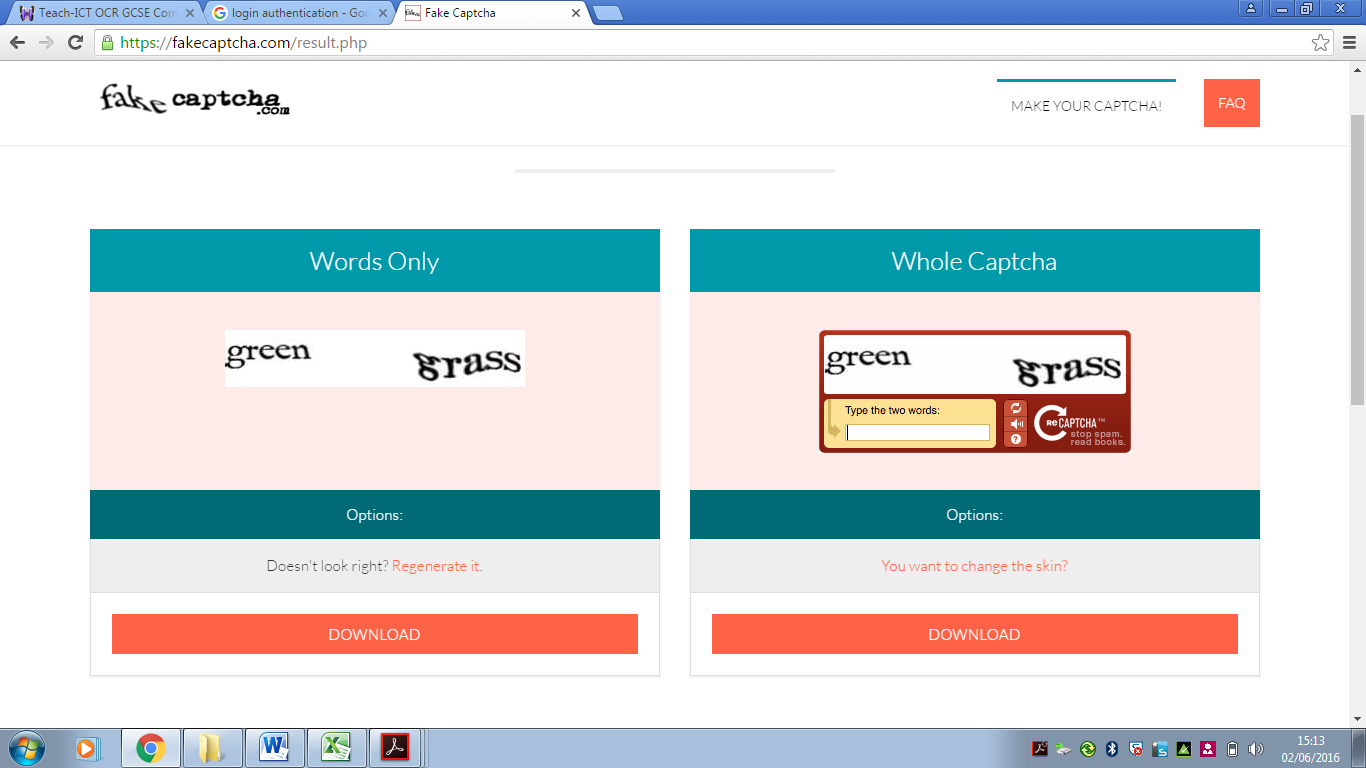
C - Request username and password

D - Send username and password

Server

Request to login

Data capture forms use authentication technology like the one below:

****

1. State the name of this technology.

|  |
| --- |
|  |

1. Describe the purpose of using this technology.

|  |
| --- |
|  |

**Answers**

**ai.** Maintainability of code allows a team of Programmers to work effectively. One way of improving maintainability of code is to use comments. What is meant by using comments in code?

|  |
| --- |
| Explains the actions of a certain block of code. |

**aii.** Explain using an example why you should use comments in code.

|  |
| --- |
| Other programmers can understand what the creator is trying to achieve.Prevent a block of code from being translated so it can be used later on/to help with spotting errors. |

**bi.** Another way of improving maintainability of code is to use indentation. What is meant by indentation?

|  |
| --- |
| Statements shifted (to the right)/Statements which are contained within a block / other statements are preceded by spaces. |

**bii.** Why should you use indentation? Give an example.

|  |
| --- |
| Code can be read easily by other programmers.Easier to test as you can see where code blocks begin and end. |

* 1. Why is it important that a business has robust validation on their registration web page?

|  |
| --- |
| To ensure that the personal details are correct.If they are incorrect then they will not be of any use. |

* 1. What are **two** examples of validation that a business can implement on their registration page?

|  |
| --- |
| * Email contains @ symbol * Strong password (mixture of characters, 8-16 characters etc) * Password verification * No blank key fields marked with \* * Text only for first name, surname * Date picker for DOB |

**ai.** The program below outputs the correct size of football for a certain age using the information from the table. The program should also output the circumference and weight.

|  |  |  |  |
| --- | --- | --- | --- |
| **Age** | **Circumference (cm)** | **Weight (g)** | **Size** |
| <8 | 58 | 311 | 3 |
| 9-11 | 64 | 369 | 4 |
| 12+ | 70 | 425 | 5 |

|  |  |  |
| --- | --- | --- |
|  | 01 Input age  02 Select age  03 Case Is >12  04 Size=5  05 Weight=311  06 Circumference=58  07 Case Is >8 AND <=11  08 Size=4  09 Weight=369  10 Circumference=64  11 Case Is <=8  12 Size=3  13 Weight=311  14 Circumference=58  15 End Select  **16** Ball\_Info=”The correct size is:” & ” “ & size & “ “ & “With a Circumference of” & Circumference & “ “ \_& “and a weight of” & “ “ & weight &”.”  17 OUTPUT BallInfo |  |

What line is the Syntax error is on?

|  |
| --- |
| 17 |

**aii.** Justify your answer for (ai).

|  |
| --- |
| Should output Ball\_Info as BallInfo does not exist |

**bi.** What line is the Logic error on?

|  |
| --- |
| 3 |

**bii.** Justify your answer for (bi).

|  |
| --- |
| Does not include 12. |

1. What is the purpose of testing?

|  |
| --- |
| To ensure that the software runs as intended.Identify errors. |

* 1. How could a software company use iterative testing to develop an app?

|  |
| --- |
| Testing throughout development after each stage**.** If faults are found then they are fixed before moving onto the next stage. |

* 1. How could the software company use final testing to develop the product?

|  |
| --- |
| Test against the initial requirements. Test for errors after the final solution has been developed. |

1. Complete the definitions for the types of testing below:

|  |  |
| --- | --- |
| **Test Data** | **Reason for use** |
| Valid data | To test that data that should be accepted is accepted. |
| Invalid data | To test that data that should not be accepted is not accepted. |
| Borderline data | This is to ensure that the system allows all data up to the maximum and minimum values that should be accepted. |

1. John has to write a program to convert exam marks out of 100 to a Grade.

A=80+, B=70-79, C=60-69, D=50-59, E=40-49, F=30-39, G=20-29, U=0-19

Complete the table below by stating the marks to be tested, the reason for test and the expected outcome. The first row has been completed for you.

|  |  |  |
| --- | --- | --- |
| **Test Data** | **Reason for test** | **Expected outcome** |
| Mark 78 | Test a valid input between 0-100 to check the correct grade is output. | B |
| Mark N | Test for invalid input. | Error message “Invalid Mark” |
| Mark 100 | Test a borderline value. | A\* |

1. When designing computer systems it is important to plan for contingencies. This is very important because it will allow developers to account for situations that were not planned.

What are two situations that might occur and what contingency could be planned to account for them?

|  |
| --- |
| Client has changed the requirements or wants additional functionality.  Ensure costs can be met/recruit skilled developers. |

1. Software can be misused in a number of ways. The table below lists statements that state acceptable use or software misuse. Tick **one** box in each row to show which use applies.

|  |  |  |
| --- | --- | --- |
| **Use** | **Acceptable Use** | **Software Misuse** |
| Making a copy of licensed software to give to a friend. |  | 🗸 |
| Changing the default settings to suit your personal needs. | 🗸 |  |
| Copying company data onto a secondary storage device |  | 🗸 |
| Using somebody else’s login details |  | 🗸 |
| Using the help feature | 🗸 |  |
| Sending spam emails to market a product |  | 🗸 |

**10.** What are **two** ways that software companies can design computer systems to prevent software misuse?

|  |
| --- |
| Strong Passwords  Regular backups  Secure Firewall  Data encryption  Set filters on email accounts |

1. The simplified diagram below shows how a user’s login credentials are dealt with by a computer system.

Complete the diagram by filling in the blanks using letters from the phrases words below.

A - Approves login request

B - Client

C - Request username and password

D - Send username and password

Server

A

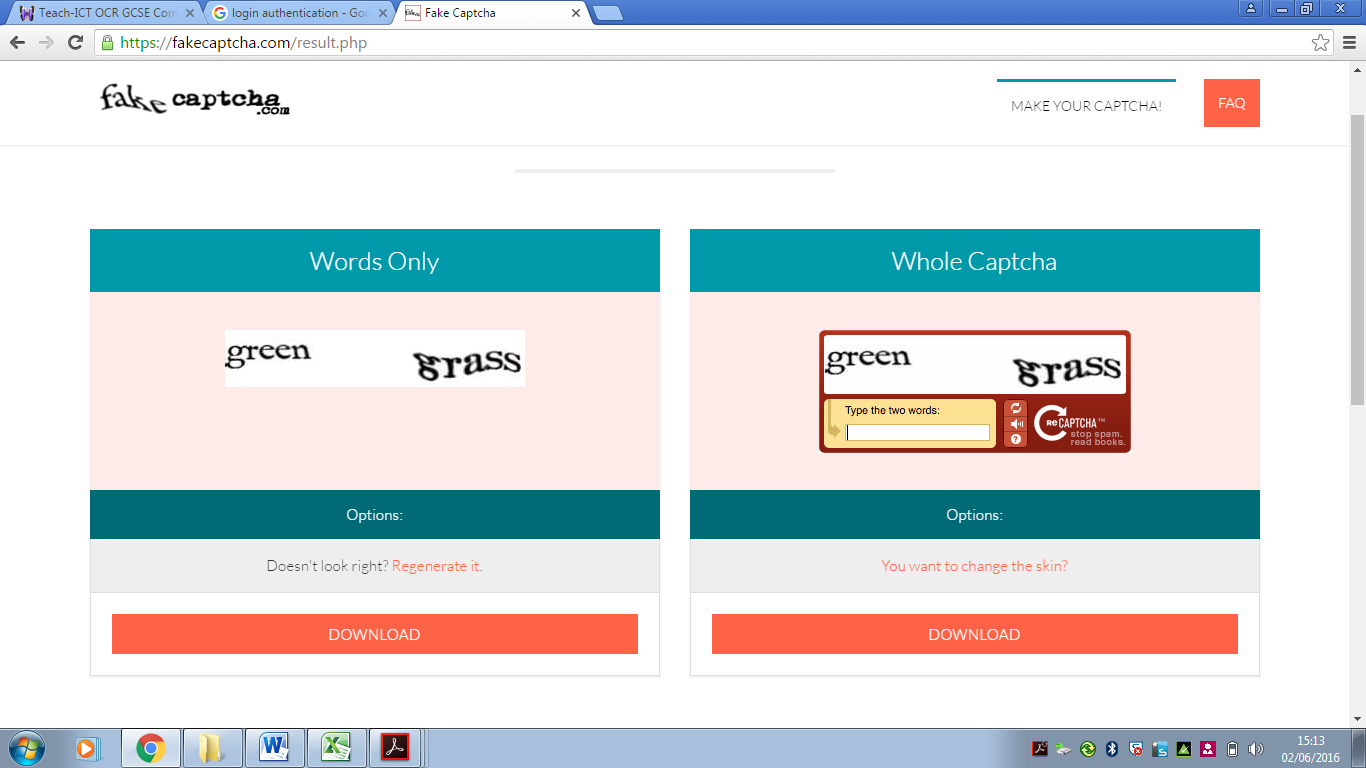
D

C

Request to login

B

* 1. Data capture forms use authentication technology like the one below:

****

State the name of this technology.

|  |
| --- |
| CAPTCHA |

1. Describe the purpose of using this technology.

|  |
| --- |
| Differentiate between a human and a machine. To ensure that the system is not misused. |

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