# Worksheet 3 Iteration

**Task 1**

1. Examine the pseudocode program given below. The function mod (a,b) gives the remainder when integer a is divided by integer b.

(a) Which lines show an example of the ‘Sequence’ programming construct?

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(b) Which lines show an example of the ‘Selection’ programming construct? \_\_\_\_\_\_\_\_\_\_\_

(c) There are two examples of iteration statements in the program. On which lines do each of the ‘Iteration’ programming construct begin and end? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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(d) If the user enters 1 and 10 for the first and last numbers in the range, what will be printed out at line 15?

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1. OUTPUT (“This program prints selected numbers in in given range.”)
2. AnotherGo 🡨 “Yes”
3. While AnotherGo = “Yes”
4. OUTPUT (“Please enter the first number in your chosen range.”)
5. LowNumber = USERINPUT
6. OUTPUT (“Please enter the last number in your chosen range.”)
7. Input (HighNumber)
8. X 🡨 0
9. For Count = LowNumber to HighNumber
10. If (mod(count,5)<>0) AND (mod(count,7)<>0) then
11. OUTPUT (Count)
12. X 🡨 X + 1
13. End If
14. Next count
15. OUTPUT (X, “numbers”)
16. OUTPUT (“Another go?”)
17. AnotherGo = USERINPUT
18. Endwhile

**Task 2**

2. Write a pseudocode algorithm which inputs numeric scores and outputs how many of them are over 100. The end of the data is signalled by a user input of -1.

3. Write a pseudocode algorithm which inputs numeric scores and outputs the average score. The end of the data is signalled by a user input of -1.

**Task 3**

4. A floor turtle uses these instructions.

|  |  |
| --- | --- |
| **Instruction** | **Meaning** |
| FORWARD ***d*** | Move ***d*** cm forward |
| BACKWARD ***d*** | Move ***d*** cm backwards |
| LEFT ***t*** | Turn left ***t*** degrees |
| RIGHT ***t*** | Turn right ***t*** degrees |
| REPEAT ***n*** | Repeat the next set of instructions ***n*** times |
| ENDREPEAT | End of REPEAT loop |
| PENUP | Raise the pen |
| PENDOWN | Lower the pen |

(Each square in the drawing is 10cm by 10cm)

(a) Complete the set of instructions to draw the shape shown below in bold lines, starting at the point marked X.

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| --- | --- |
|  |  |
|  |  |

**X**

PENDOWN

REPEAT 4

(b) Complete the set of instructions to draw the shape shown below in bold lines, starting at the point marked X.

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|  |  |  |  |  |  |  |  |

**X**

PENDOWN

REPEAT 3

REPEAT 4

(c) Complete the set of instructions to draw the shape shown below in bold lines, starting at the point marked X.

PENDOWN

distance 🡨 10

REPEAT 7

|  |  |  |  |  |  |  |
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