Name: Class:

Task 1

The below table shows a number of values. For each one, choose the correct data type used to store it. The first row has been completed for you.

|  |  |  |  |
| --- | --- | --- | --- |
| Value | Data type | Value | Data type |
| 3 | **Integer** | **'A'** | **Char (character)** |
| TRUE |  | **3.02** |  |
| -6 |  | **'4'** |  |
| "Hello" |  | **FALSE** |  |
| -3.0 |  | **"P"** |  |

Task 2

The below table shows a number of Boolean expressions. For each one, state whether it evaluates to TRUE or FALSE. The first row has been completed for you.

|  |  |  |  |
| --- | --- | --- | --- |
| Expression | Evaluates to… | Expression | Evaluates to… |
| 5 > 2 | **TRUE** | **80 < 80** | **FALSE** |
| 24 + 1 <= 25 |  | **16 – 1 < 16** |  |
| 5^2 = 25 |  | **3 >= 3** |  |
| 5 <> 3 |  | **"Hel" + "lo" = "Hello"** |  |
| 2 = '2' |  | **age = age + 1** |  |

Task 3

1. Examine the pseudocode program given below. The operator MOD, e.g. **a MOD b** gives the remainder when integer **a** is divided by integer **b**.

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

(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 constructs begin and end?

(d) If the user enters 1 and 10 for the first and last numbers in the range, what will be printed out at line 13? Which numbers is the program counting?

1. OUTPUT "This program prints selected numbers in in given range. "
2. AnotherGo 🡨 "Yes"
3. WHILE AnotherGo = "Yes" DO
4. INPUT LowNumber
5. INPUT HighNumber
6. x 🡨 0
7. FOR Count = LowNumber TO HighNumber
8. IF Count MOD 5 <> 0 AND Count MOD 7 <> 0)
9. THEN
10. OUTPUT Count
11. x 🡨 x + 1
12. ENDIF
13. NEXT Count
14. OUTPUT x, " numbers"
15. INPUT AnotherGo
16. ENDWHILE

2. Write a pseudocode algorithm which allows a user to input numeric scores and prints how many of them are over 100. The program allows the user to enter any number of scores. If the user enters “-1” the program will end.

|  |
| --- |
|  |

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

|  |
| --- |
|  |

4. Nazim wants to create a game of rock, paper and scissors. In this game two people simultaneously make their hand into a shape representing rock, paper or scissors. Scissors cuts paper, so wins. Paper wraps rock so wins. Stone breaks scissors, so wins. If both players choose the same item, it is a draw.

Nazim starts by generating 2 random numbers between 1 and 3 to represent the three possibilities, and assigning them to rock (1), paper (2) or scissors (3).

(a) Add a selection statement to print out what each player has chosen (rock, paper or scissors) and “Player1 wins”, “Player 2 wins” or “Draw” as appropriate.

(b) Add statements so that five rounds of the game are played before the program ends.  
random(a,b) will return a random integer between 1 and 3.

Hand1 🡨 random(1,3)

Hand2 🡨 random(1,3)

Player1 🡨 ""

Player2 🡨 ""

CASE OF Hand1

1 : Player1 🡨 "Scissors"

2 : Player1 🡨 "Paper"

3 : Player1 🡨 "Stone"

ENDCASE

CASE OF Hand2

1 : Player2 🡨 "Scissors"

2 : Player2 🡨 "Paper"

3 : Player2 🡨 "Stone"

ENDSWITCH

OUTPUT "Player 1: ", player1, ", Player2: ", player2

IF Hand1 = Hand2

THEN