Faculty of Computing

IT1120 – Introduction to Programming

Year 1 Semester 1 (2024)

Tutorial 03

1. Assume i = 1, j = 2, k = 3 and m = 2. Find the result of the following conditions?

(a)	$i == 1$	True
(b)	$j == 3$	False
(c)	$i \geq 1 \&\& j < 4$	True
(d)	$m \leq 99 \&\& k < m$	False
(e)	$j \geq 1 \mid\mid k == m$	True
(f)	$(k + m < j) \mid\mid (3 - j \geq k)$	False
(g)	$!(i == k)$	True
(h)	$!(j == m)$	False
(i)	$!(k > m)$	False
(j)	$!(j > k)$	True

2. Write conditions to check the following

   (a) Find the larger number from two numbers

   (number1 > number2)

   (b) Find whether a number is less than 100

   (number < 100)

   (c) Find whether a number is an even

   (number % 2 == 0)

   (d) Assume two integers are available and find whether the first number is a multiple of the second

   (number1 % number2 == 0)

   (e) Find whether the mark is greater than or equal to 0 and less than or equal to 100

   ((mark >= 0) && (mark <= 100))

   (f) Status can take 1,0 or -1 as valid values. Find whether a valid value is entered for status

   ((status == 1) || (status == 0) || (status == -1))

3. Interest rate for a fixed deposit is calculated at the end of one year.

   Write a pseudo code to input the amount deposited and the interest rate from the keyboard and calculate the interest earned at the end of one year.

```
MAIN

    DEFINE amount_deposited, interest_rate, interest_earned AS DOUBLE

    PRINT "Enter the amount deposited:"
    INPUT amount_deposited

    PRINT "Enter the interest rate (as a percentage):"
    INPUT interest_rate

    interest_earned = amount_deposited * (interest_rate / 100.0)

    PRINT "The interest earned at the end of one year is:",  interest_earned

ENDMAIN
```

4. Final mark of a module is calculated by considering two components, exam marks and the lab submission marks. The percentages taken from each component as the final mark.

   You are asked to write a pseudocode to Input the exam marks(given out of 100) and the lab submission marks(given out of 100) from the keyboard. Validate the entered marks(should be greater than or equal to 0 and less than or equal to 100).

   Input the percentage taken from the exam mark and the lab submission mark from the keyboard. Validate the values. (entered percentages should add to 100).

   Calculate the final exam marks

   Sample Output:

   Please enter exam marks: 90

   Please enter lab submission marks :80

   Please enter the percentage given for the exam : 50.0

   Please enter the percentage given for the lab submission : 50.0

   Final exam mark : 85.0

   Test your program

```
MAIN

  DEFINE exam_marks, lab_marks, exam_percentage, lab_percentage, total_percentage, final_mark AS FLOAT

  PRINT "Please enter exam marks (0-100):"
  INPUT exam_marks

  IF exam_marks < 0 OR exam_marks > 100 THEN
    PRINT "Invalid exam marks! Please enter a value between 0 and 100."
  ENDIF

  PRINT "Please enter lab submission marks (0-100):"
  INPUT lab_marks
```

```
  IF lab_marks < 0 OR lab_marks > 100 THEN
    PRINT "Invalid lab marks! Please enter a value between 0 and 100."
  ENDIF

  PRINT "Please enter the percentage given for the exam:"
  INPUT exam_percentage
  PRINT "Please enter the percentage given for the lab submission:"
  INPUT lab_percentage

  total_percentage = exam_percentage + lab_percentage

  IF total_percentage != 100 THEN
    PRINT "Invalid percentages! The sum of percentages must be 100."
  ENDIF

  final_mark = (exam_marks * exam_percentage / 100.0) + (lab_marks *
lab_percentage / 100.0)

  PRINT "Final exam mark:", final_mark

ENDMAIN
```