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IPD9

Programming I (Assignment 01) (20 points) (10%)

a) In a selection, the else clause executes . (1 point)

a. when the tested condition is true

b. when the tested condition is false

c. always

d. only after the if clause executes

b) If x <= y is true, then . (1 point)

a. x = y is true

b. y <= x is true

c. x > y is false

d. x >= y is false

c) If m is true and n is false, then . (1 point)

a. m AND n is true

b. m AND n is false

c. m OR n is false

d. If m is true, then n must be true.

d) In the following pseudocode, what percentage raise will an employee in Department 8 receive? (1 point)

IF department < 5 THEN

raise = SMALL\_RAISE

ELSE

IF department < 14 THEN

Raise = MEDIUM\_RAISE

ELSE

IF department < 9 THEN

raise = BIG\_RAISE

ENDIF

ENDIF

ENDIF

a. SMALL\_RAISE

b. MEDIUM\_RAISE

c. BIG\_RAISE

d. impossible to tell

e) If a is true, b is true, and c is false, which of the following expressions is true? (1 point)

a. a OR b AND c

b. a AND b AND c

c. a AND b OR c

d. two of the above

1. Design a flowchart for the following logic: prompt the user for two numbers. Then print the SUM of the numbers and the PRODUCT. Print both results with a descriptive message. (2 points)

START

INPUT N1 N2

SUM=N1+N2 PRODUCT=N1\*N2

PRINT SUM, PRODUCT

END­­

1. Design a flowchart for the following program. The program must prompt for a number. Depending on whether the number is even or odd, print a message to the user, letting him/her know the nature of the number. Hint: how does an even / odd number reacts when divided by 2? (2 points)

START

INPUT N

(N%2)==0

True

False

N is Odd

N is Even

END

3) Design a flowchart for a program that accepts two numbers from a user and displays one of the following messages: First is larger, Second is larger, Numbers are equal. (2 points)

START

INPUT N1 N2

N1>N2

false

true

N2>N1

First is larger

false

true

Second is larger

Numbers are equal

END

4) (4 points) Write pseudocode for the following program logic. The program prompts the user to enter a temperature in degrees Fahrenheit (i.e. 75, 78.3, -10.5, etc.). Then convert the temperature to degrees Celsius according to the formula:

°C = (°F - 32) x 5/9

Then print a message according to the following logic:

If the temperature (Celsius) is less than or equal to -15.0 print: “It’s (temp) degrees Celsius, Let’s get out of here!”

If the temperature is higher than -15.0 but less than or equal to 0.0 then print: “It’s (temp) degrees Celsius, Get your boots and gloves!”

If the temperature is higher than 0.0 but less than or equal to 15.0 then print: “It’s (temp) degrees Celsius, I have my sweater!”

If the temperature is higher than 15.0 then print: “It’s (temp) degrees Celsius, It is BBQ time!!”

For this question practice the use of IF ELSE-IF structure.

VAR F ,C (Fahrenheit and Celsius temperature)

START

INPUT F

SET C = (F - 32) x 5/9

IF C <= -15.0 THEN

PRINT “It’s (C) degrees Celsius, Let’s get out of here!”

ELSE-IF (C> -15.0) AND (C<=0.0) THEN

PRINT “It’s (C) degrees Celsius, Get your boots and gloves!”

ELSE-IF (C > 0.0 ) AND (C<=15.0) THEN

PRINT: “It’s (C) degrees Celsius, I have my sweater!”

ELSE-IF C> 15.0 THEN

PRINT: “It’s (C) degrees Celsius, It is BBQ time!!”

ENDIF

END

5) (5 points ) Write pseudocode for a program that prompts for an amount in dollars (let’s say 23.50) and breaks it down into coins denominations (ie. So many coins of: $2, $1, $0.25, $0.10, $0.05).

Desk check your login with the values: 10, 23.65 and 0.40

VARIABLES T L Q D N for 2,1,.025,0.10,0.05 (toonies loonies quarter dime nickels)

START

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A | T | L | Q | D | N |
| 10 | 0 | 0 | 0 | 0 | 0 |
| 8 | 1 |  |  |  |  |
| 6 | 2 |  |  |  |  |
| 4 | 3 |  |  |  |  |
| 2 | 4 |  |  |  |  |
| 0 | 5 |  |  |  |  |
|  |  |  |  |  |  |
| A | T | L | Q | D | N |
| 23.65 | 0 | 0 | 0 | 0 | 0 |
| 21.65 | 1 |  |  |  |  |
| 19.65 | 2 |  |  |  |  |
| 17.65 | 3 |  |  |  |  |
| 15.65 | 4 |  |  |  |  |
| 13.65 | 5 |  |  |  |  |
| 11.65 | 6 |  |  |  |  |
| 9.65 | 7 |  |  |  |  |
| 7.65 | 8 |  |  |  |  |
| 5.65 | 9 |  |  |  |  |
| 3.65 | 10 |  |  |  |  |
| 1.65 | 11 |  |  |  |  |
| 0.65 |  | 1 |  |  |  |
| 0.40 |  |  | 1 |  |  |
| 0.15 |  |  | 2 |  |  |
| 0.05 |  |  |  | 1 |  |
| 0 |  |  |  |  | 1 |
|  |  |  |  |  |  |
| A | T | L | Q | D | N |
| 0.40 | 0 | 0 | 0 | 0 | 0 |
| 0.15 |  |  | 1 |  |  |
| 0.05 |  |  |  | 1 |  |
| 0 |  |  |  |  | 1 |

SET T ,L , Q, D , N =0

INPUT A

WHILE A >= 2 THEN

SET A=A-2

SET T=T+1

ENDWHILE

PRINT T

WHILE A >= 1 THEN

SET A=A-1

SET L=L+1

ENDWHILE

PRINT L

WHILE A >= 0.25 THEN

SET A=A-0.25

SET Q=Q+1

ENDWHILE

PRINT Q

WHILE A >= 0.10 THEN

SET A=A-0.10

SET D=D+1

ENDWHILE

PRINT L

WHILE A >= 0.05 THEN

SET A=A-0.05

SET N=N+1

ENDWHILE

PRINT N

END