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 Department8 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

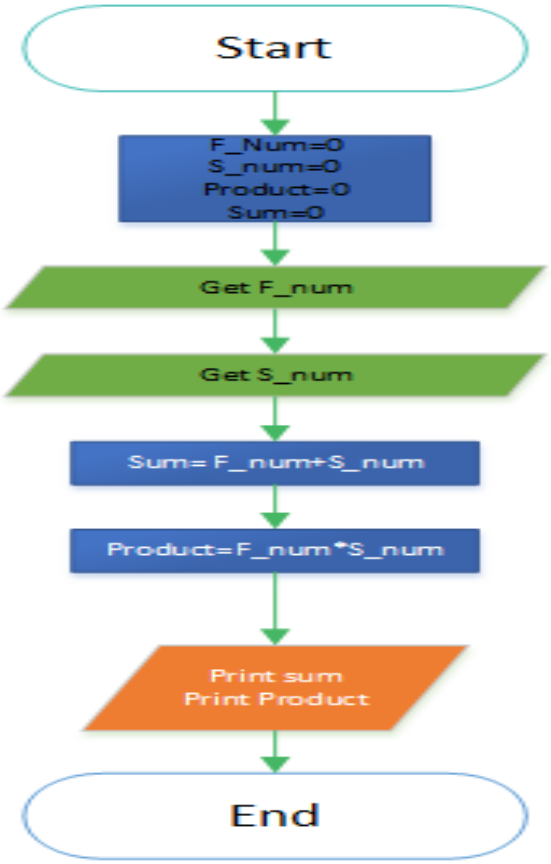
b. a AND b AND c

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)

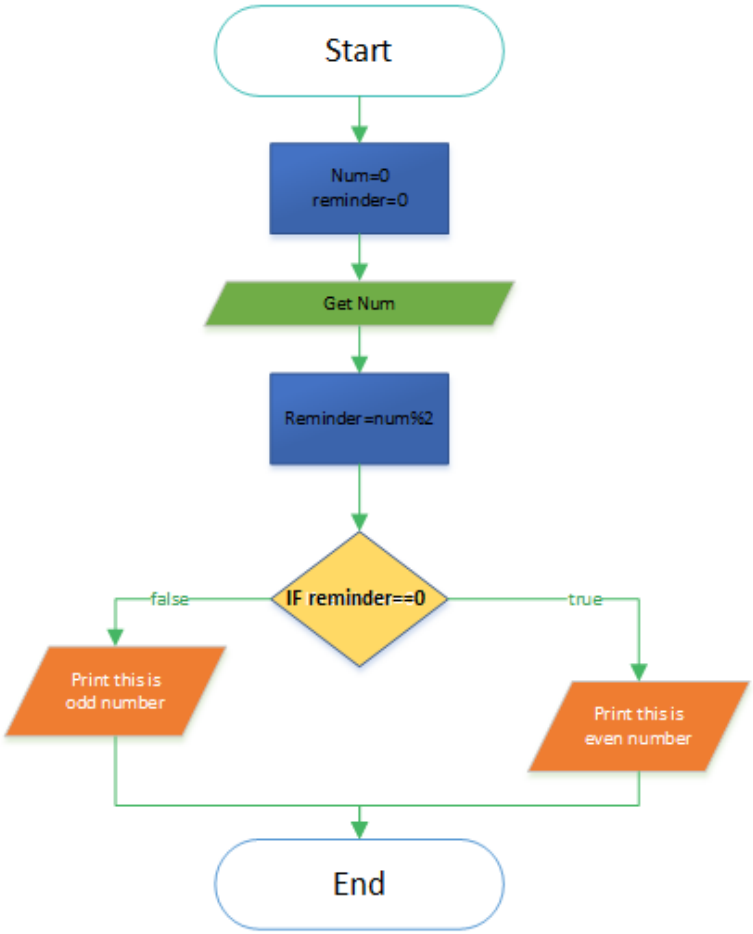
Ans:



Ans to the qes. 1

2) 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)

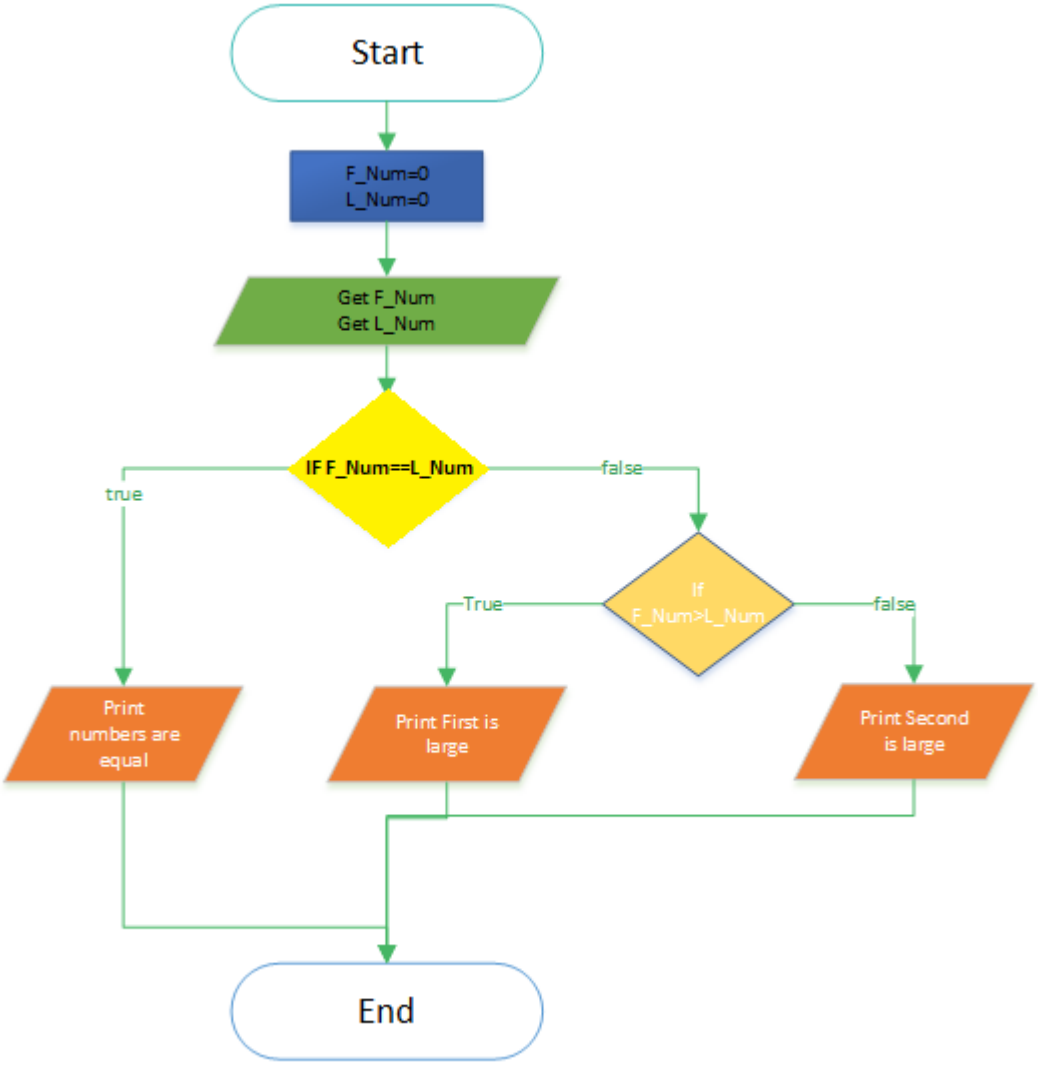
Ans:



Ans to the qes. 2

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)

Ans:



Ans to the qes. 3

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.

Ans:

```
Start
Get f_temp
Set c_temp = (f_temp-32)*(5/9)
IF c_temp<=-15.0
        Print "It's (temp) degrees Celsius, Let's get out of here!"
ELSE IF c_temp > -15.0 AND c_temp <= 0.0
        Print "It's (temp) degrees Celsius, Get your boots and gloves!"
ELSE IF c_temp > 0.0 AND c_temp <= 15.0
        Print "It's (temp) degrees Celsius, I have my sweater!"
ELSE IF c_temp > 15.0
        Print "It's (temp) degrees Celsius, It is BBQ time!!"
END IF
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

Ans:

```
START
        SET amount=0, N_Coins=0; GET amount
        IF amount>=2
                Print (amount/2) of $2
                Amount=amount%2
        END IF
        IF amount>=1
                Print (amount/1) of $1
                Amount=amount%2
        END IF
        IF amount>=.25
                Print (amount/0.252) of $0.25
                Amount=amount%2
        END IF
        IF amount>=.10
                Print (amount/0.10) of $0.10
                Amount=amount%0.10
        END IF
        IF amount>=.05
                Print (amount/0.05) of $0.05
                Amount=amount%0.05
        END IF
END
```

Desk check

For $23.50

Initial value N_Coins=0

Amount=0, before the IF clause starts amount is 23.65. Now after first IF clause it goes like this

N_Coins	amount	$2	$1	$0.25	$0.10	$0.005
11	3.50	11				
1	0.50		1			
2	0.0			2		