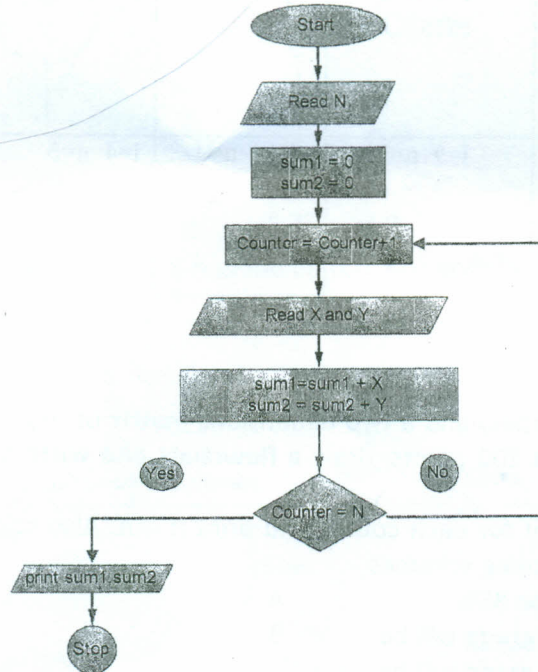


Try All Questions**Problem 1****20 Points**

- A) Explain with detailed example the phases of the software life cycle (5 Points)
- B) Given the following data (**Table 1**) for of X and Y variables, N times write the pseudo code for the following flow chart (figure 1) and calculate its output? If there is missing steps in the flow chart list and correct it. (15 Points)

X	4	5	6	8	1	22	56	23	10
Y	18	15	61	12	2	33	4	55	66

Table 1**Figure 1**

Problem 2

Choose between A or B or C or D as a right answer.

10 Points

Question	A	B	C	D
1-What is the only function all C++ programs must contain?	start()	system()	main()	program()
2-What punctuation is used to signal the beginning and end of code blocks?	{ }	-> and <-	BEGIN and END	(and)
3-What punctuation ends most lines of C++ code?	.	;	:	'
4-Which of the following is the boolean operator for logical-and?	&	&&		\&
5-Evaluate !(1 && !(0 1)).	True	False	Unevaluata ble	Syntax error
6-Which of the following shows the correct syntax for an if statement?	if <i>expression</i>	if{ <i>expression</i>	if(<i>expression</i>)	<i>expression</i> if
7-What is the final value of x when the code int x; for(x=0; x<10; x++) {} is run?	10	9	0	1
8-Which is not a loop structure?	for	do while	while	repeat until
9-Consider the following section of C++ program, in which i and n are int variables n = 7; i = 4; i = n++; What are the values of i and n ?	i=7 n=8	i=7 n=7	i=8 n=8	i=4 n=7
10-Consider the following section of C++ program, in which i and n are int variables n = 5; i = 9; i = --n; What are the values of i and n ?	i=9 n=5	i=4 n=4	i=4 n=5	i=5 n=4

Problem 3**20 points**

Given a vector of 100 students (names) and a two dimensions matrix of degrees of 5 courses for each student, the final of each course is 100 points, draw a **flowchart** and write a **pseudo code** to do the following:

Calculate the grade of each student for each course and print it out. Also calculate the total grade of every student, use the following grading schemes.

Degree >= 90 points the <u>grade</u> will be 85%	A
75 points <= Degree < 85 points the <u>grade</u> will be	B
65 points <= Degree < 75 points the <u>grade</u> will be	C
50 points <= Degree < 65 points the <u>grade</u> will be	D
Degree < 50 points the grade will be	F

Problem 4**30 points**

A. Draw a flowchart and write pseudo code to print out the prime numbers from 1 to 30 given the following condition.

An integer $p > 1$ is prime number if and only if the factorial $(p - 1)! + 1$ is divisible by p finally write C++ code to implement that problem, write C++ code. (15 Points)

B. Given two matrices $A(N,N)$ and $B(N,N)$ Draw flowchart, write pseudo code and write C++ code for the following : (15 Points)

1. Addition of the two matrices.
2. Subtraction of the two matrices.
3. Multiplication of a matrix A by a scalar.
4. Multiplication of a matrix A by a matrix B.
5. Transpose a matrix A and matrix B.

Problem 5

20 Points

A. For the sequential circuit shown in the following figure 2, the current flowing through the inductor is zero. At $t = 0$, the switch moved from position a to b, where it remained for 1 s. After the 1 s delay, the switch moved from position b to position c, where it remained indefinitely. Sketch the current flowing through the inductor versus time analytically and write a full C++ code for your solution after drawing the flowchart. (10 Points)

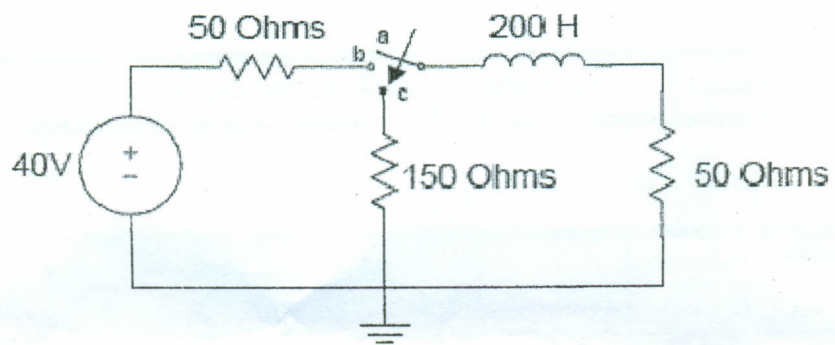


Figure 2

B. For the circuit shown in figure 3 find the current $i(t)$ and the voltage $V_c(t)$ analytically and (15 Points)
 1-Draw Flowchart,
 2-Write pseudo code
 3-Full C++ code, for the solution.

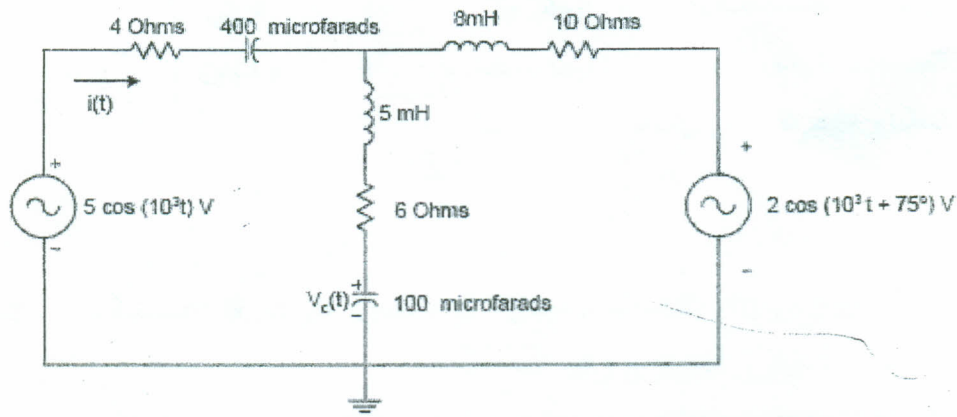


Figure 3