



Tray All Question

Problem 1

10 Points

Write psudo code, draw flowchart and write c++ code that can do the following:

- addition of two matrices
- subtraction of two matrices
- multiplication of a matrix by a scalar
- multiplication of a matrix by a matrix
- transpose a matrix

Problem 2

10 Points

Given a vector of 400 students (names) and a two dimensions matrix of degrees of 10 courses for each student, the final of each course is 150 points, draw a flowchart, write a pseudo code and write full C++ 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 grade will be 85% A
75 points \leq Degree < 85 points the grade will be B
65 points \leq Degree < 75 points the grade will be C
50 points \leq Degree < 65 points the grade will be D
Degree < 50 points the grade will be F

The output of the program has to be like the following:

```
=====
Student Name = Course1 = course2 = Course3 = Course4 = Course5 = Total Grade=
=====
=        =        =        =        =        =        =
```

Problem 3 The Problem is two parts A) and B)

10 Points

A)

5 Points

Given the following 100 cells figure 1 write a pseudo code and draw flow chart to print out the numbers in the gray cells?

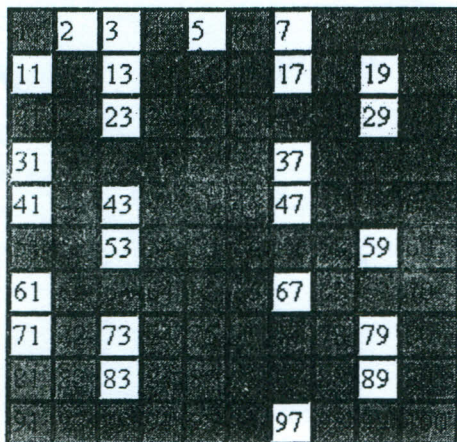


Figure 1 100 cell figures

B)

5 Points

Given the following data (Table1) 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 (give any value to N).

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

Table 1

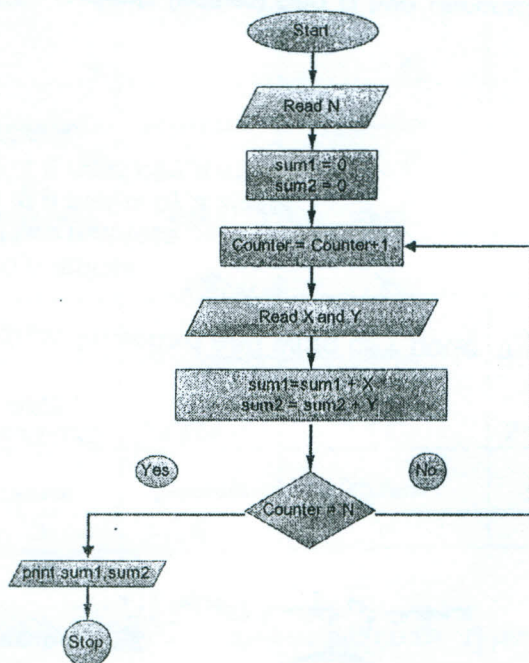


Figure 2

Problem 4

The problem is two parts A) and B)

8 Points

- A- For the sequential circuit shown in the following figure 3, In the circuit below the switch has been closed for a very long time and opens at $t=0$ Compute $V_C(t)$ for $t > 0$, Analytically, write a full C++ code for your solution after writing pseudocode and drawing the flowchart.
(4 Points)

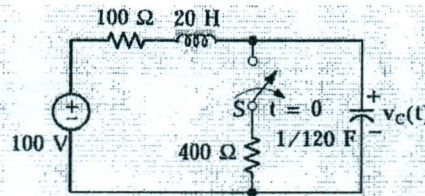


Figure 3

- B- For the circuit shown in figure 4 $i_S(t) = 10 \cos(5000t)$ mA Compute $i_G(t)$, $i_L(t)$ and $i_C(t)$

- 1-Draw Flowchart,
- 2-Write pseudo code
- 3-Full C++ code, for the solution.

(4 Points)

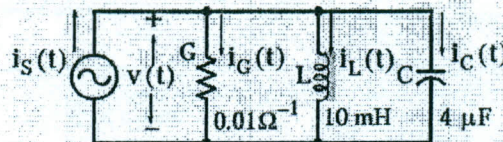


Figure 4

Problem 5 This question is two parts A and B

12 Points

- A) Try the following and write the correct answer

7 Points

Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Answer													

- 1) Which of the following is an invalid C++ assignment operation. Assume that all variables are ints.
- `x = x = x += 100;`
 - `++i = 155 * x++;`
 - `a = 100 + x / 7;`
 - `b %= 3 * x % 2;`
- 2) Which of the following is the correct way of converting degrees Fahrenheit (F) to degrees Celsius (C). F and C are doubles. (Recall that 0C is 32F and there are 9/5 degrees F per degree C.)
- `C = 5.0 / 9.0 * F - 32.0;`
 - `C = F - 32.0 * 9.0 / 5.0;`
 - `C = (F - 32.0) * 5.0 / 9.0;`
 - `C = F * 5.0 / 9.0 + 32.0;`
- 3) Which of the following is a correct variable declaration.
- `double bool;`
 - `int 7_days_in_may;`
 - `int _22_;`
 - `float I_NEED_$$$;`
- 4) A run-time error is always caused by:
- wrong syntax
 - incorrect logic
 - missing a library function
 - missing a header file
 - All of the above
- 5) Which one of the following is a correct in C++ to express: **y** is between **x** and **z**, inclusive.
- `(x < y < z)`
 - `(x <= y <= z)`
 - `(y > x && y > z)`
 - `(y >= (x && y) >= z)`
- 6) Which of the following code correctly determines if **x**, **y**, and **z** are not equal to each other?
- `x != y != z`
 - `((x = y) != z)`
 - `x != y && y != z`
 - none of these
- 7) What is the value of **n** after the following switch statement.
- ```
int n = 22;
switch(n)
{
 case 20: n++;
 break;
 case 22: n--;
 break;
 case 23: --n;
 break;
 case 24: n*=3;
 break;
 default: n = n*5;
};
```
- 20
  - 21
  - 22
  - 110
- 8) Which of the following is an invalid logical expression. Assume that all variables are ints.
- `a >= b && x != 5`
  - `a = b && c <= d`
  - `500 <= x`
  - none of the above

9) `cout << sin(90);`

The above code fragment will display:

- a) 0.00
- b) 1.00
- c) 0
- d) none of the above

10) Which set of function prototypes can be overloaded

- a) `int GetValue(int dummy);`  
`void GetValue(int dummy, int &input);`
- b) `int GetValue(int dummy);`  
`double GetValue(int dummy);`
- c) `int GetValue(int dummy, int input);`  
`int GetValue(int dummy, int dataValue);`
- d) none of the above

11) From the following definition

```
void f(int& one, int two)
{
 int temp;

 temp = one++;
 one = two;
 two = temp;
}
```

What is the value of x and y after the following statements execute? (Assume that variables are properly declared.)

```
two = 10;
one = 15;
f(two, one);
```

- a) one = 10, two = 15;
- b) one = 16, two = 10;
- c) one = 15, two = 11;
- d) one = 15, two = 10;

12) `double a = 10;`  
`double b = 10.75;`  
`int c = 10;`

```
cout << c + ((int(b) > a)? b : a);
```

The above segment will display

- a) 20
- b) 20.75
- c) 10.75
- d) None of the above

13) `char letter = 'r';`  
`bool test = letter;`  
`cout << test;`

After the above segment the output will be;

- a) r
- b) 0
- c) 1
- d) 114

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

5

| 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<br><i>expression</i> | if{<br><i>expression</i> | if(<br><i>expression</i> ) | <i>expression</i><br>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++;<br><br>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;<br><br>What are the values of i and n ? | i=9 n=5                 | i=4 n=4                  | i=4 n=5                    | i=5 n=4                 |

Use the following Answer Table in your answer and put any sign in the suitable cell

|          | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| <u>A</u> |          |          |          |          |          |          |          |          |          |           |
| <u>B</u> |          |          |          |          |          |          |          |          |          |           |
| <u>C</u> |          |          |          |          |          |          |          |          |          |           |
| <u>D</u> |          |          |          |          |          |          |          |          |          |           |

*Good Luck*