

DAIICT – Autumn 2021  
IT603-Programming  
MM: 40  
Time: 60 min

Q1. A C++ source code is statically dependent on a library named xyz.lib because it uses some functions from this library. When and by which tool/process these functions from the library are resolved for definitions?

- a. Compiler during compilation
- b. Linker during linking
- c. Pre-processor during compilation
- d. Operating System during runtime

Mark: 2

Words: 1

Q2. Which of the following is the binary representation (LSB on right) of 0xA49C

- a. 1010 0100 1001 1100
- b. 1100 1001 0100 1010
- c. 1001 0100 1010 1100
- d. 1010 1000 0101 0100

Mark:2

Words: 1

Q3. Provide declaration of a function test() that –

- takes one parameter named 'arr' which is reference to a 2-dimensional char array of 5 rows and 6 columns
- returns a std::pair of an integer and a char.

Marks: 4

Words: 50

Q4. Use range based for loop in program which uses the following array and updates it such that the even numbers get doubled, but no change is done to odd numbers.

```
int arr[] { 10, 21, 13, 34, 50, 65, 72 };
```

Then, use another range based for loop to print the arr array to console. The output when this program is run should look like:

20 21 13 68 100 65 144

Marks: 6

Words: 700

Q5. For a 2-d matrix, the right most column should have sum of respective rows and bottom row should have sum of respective columns. eg:

20	-10	20	30
20	20	20	60
-10	-20	20	-10
30	-10	60	80

Write a program to do so. Use following hardcoded matrix 'm' as input. Use another matrix for preparing the result as above. You do not need to print anything to output.

```
int m[3][3] {{20,-10,20},  
             {20,20,20},  
             {-10,-20,20}};
```

Marks: 8

Words: 700

Q6. Write a program to create a 2-d array of 4 rows x 50 columns and copy following strings to it in order of their length, first being the string with least length. Your program should work correctly regardless of order of the strings in array below.

```
char input[][50] {"Little bigger than medium",
                 "Small",
                 "This is longest string of all",
                 "Medium string"};
```

Marks: 9

Words: 700

Q7. Complete the following function for bitwise operations according to the comments provided. In your answer, write the whole function. You are not allowed to modify the code already written and it should be used in the portion that you write.

```
void bitwiseTest ()
{
    uint op{0b0111'0101'1010'0101}; // 30117

    cout << op << endl;

    uint bitVal{0};
    uint bcv{0};
    uint pos{0};

    // read the state of 3rd bit (2nd index) into bitVal

    // <write code>

    cout << bitVal << endl;
    bitVal = pos = bcv = 0;

    // set 10th bit

    // <write code>

    cout << op << endl;
    bitVal = pos = bcv = 0;

    // reset 6th bit

    // <write code>

    cout << op << endl;
}
```

The output of this function on console is the following:

30117

1

30629

30597

Marks: 9

Words: 700