

# Control Structure (if -- else)

# 4

## WEEK

### KEYWORDS:

If else

### LAB EXERCISE:

#### Program 1:

Type the following program in the editor of the C++ environment. Compile the program and run it.

```
#include<iostream>

using namespace std;

int main()
{
    int a=2,b=3,small;

    if(a<b)
    {
        small=a;
    }
    else
    {
        small=b;
    }

    cout <<"Small = "<< small;
    cout << endl;

    system("PAUSE");
    return 0;
}
```

#### Output:

Small = 2

**Program 2:**

Type the following program in the editor of the C++ environment. Compile the program and run it for score=110 and score=70.

```
#include<iostream>

using namespace std;

int main()
{
    int score;

    cout <<"Enter the test score: ";
    cin >> score;

    if (score > 100)
        cout <<"Error: score is out of range." ;
    else if (score >= 90)
        cout <<'A';
    else if (score >= 80)
        cout <<'B';
    else if (score >= 70)
        cout <<'C';
    else if (score >= 60)
        cout <<'D';
    else if (score >= 0)
        cout <<'F';
    else cout <<"Error: score is out of range.";

    cout << endl;

    system("PAUSE");
    return 0;
}
```

**Output for score = 110:**

Error: score is out of range.

**Output for score = 70:**

C

## ASSIGNMENT:

**Question 1:** Suppose that x, y, and z are int variables, and x = 10, y = 15, and z = 20. Determine whether the following expressions evaluate to true or false.

- |   |            |
|---|------------|
| a. $!(x > 10)$  | .....true  |
| b. $x \leq 5 \parallel y < 15$                                | .....false |
| c. $(x \neq 5) \&\& (y \neq z)$                               | .....true  |
| d. $x \geq z \parallel (x + y \geq z)$                        | .....true  |
| e. $(x \leq y - 2) \&\& (y \geq z) \parallel (z - 2 \neq 20)$ | .....true  |

**Question 2:** Suppose that x, y, z, and w are int variables, and x = 3, y = 4, z = 7, and w = 1. What is the output of the following statements?

- a. `cout << "x == y: " << (x == y) << endl;`
- b. `cout << "x != z: " << (x != z) << endl;`
- c. `cout << "y == z - 3: " << (y == z - 3) << endl;`
- d. `cout << "!(z > w): " << !(z > w) << endl;`
- e. `cout << "x + y < z: " << (x + y < z) << endl;`

**Output:**

```
x == y: 0
x != z: 1
y == z - 3: 1
!(z > w): 0
x + y < z: 0
```

**Question 3:** The following program contains errors. Correct them so that the program will run and output w = 21.

<pre>#include &lt;iostream&gt;  using namespace std;  const int SECRET = 5 main () {     int x, y, w, z;     z = 9;     if z &gt; 10         x = 12; y = 5, w = x + y + SECRET;     else         x = 12; y = 4, w = x + y + SECRET;     cout &lt;&lt; "w = " &lt;&lt; w &lt;&lt; endl; }</pre>	<pre>#include &lt;iostream&gt; using namespace std; const int SECRET = 5; int main(){     int x, y, w, z;     z = 9;     if (z &gt; 10){         x = 12;         y = 5;         w = x + y + SECRET;     }     else{         x = 12;         y = 4;         w = x + y + SECRET;     }     cout &lt;&lt; "w = " &lt;&lt; w &lt;&lt; endl;      return 0;}</pre>
--	---

**Question 4:** Write C++ program that prompts user to enter gender as a character. The program then displays Male if the gender entered by user is 'M', Female if the gender is 'F' and invalid otherwise.

**Input and Output:**

output : "Please Enter 'M' if you male or 'F' if you Female"

input : M

output : " Male "

---

output : "Please Enter 'M' if you male or 'F' if you Female"

input : F

output : " Female "

---

output : "Please Enter 'M' if you male or 'F' if you Female"

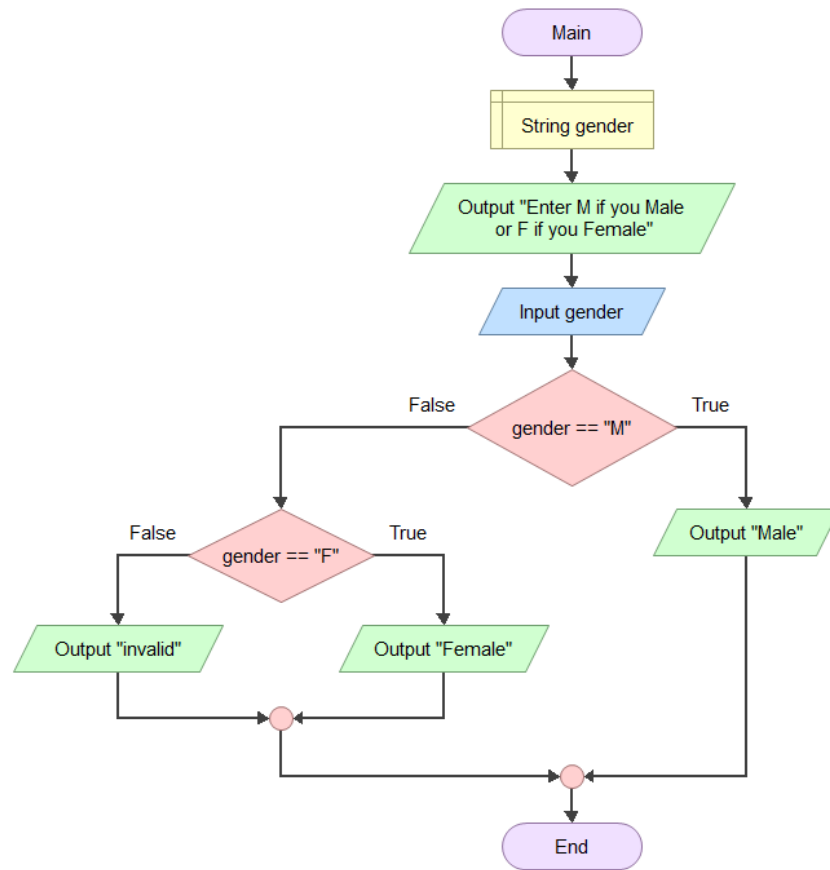
input : Z

output : " invalid "

**Constants and Variables:**

char gender

**Flowchart:**



**Code:**

```
#include <iostream>
using namespace std;
int main(){
char gender;
cout<<"Please Enter 'M' if you male or 'F' if you Female :";
cin>>gender;
if(gender == 'M'){
cout<<"Male";
}
else if(gender == 'F'){
cout<<"Female";
}
else{
cout<<"invalid";
}

return 0;}
```

**Question 5:** Write a program that prompts the user to input a number. The program should then output the number and a message saying whether the number is positive, negative, or zero.

**Input and Output:**

output : "Please Enter number"

input : 9

output : " positive "

---

output : "Please Enter number"

input : 0

output : " zero "

---

output : "Please Enter number"

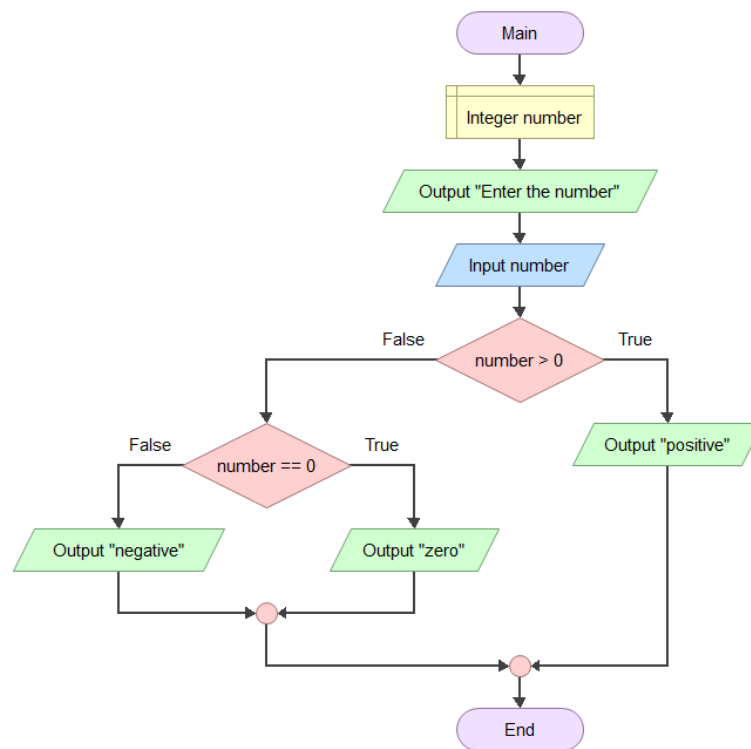
input : -2

output : " negative "

**Constants and Variables:**

int number

**Flowchart:**





**Code:**

```
#include <iostream>
using namespace std;
int main(){
int number;
cout<<"Please Enter number : ";
cin>>number;
if(number > 0){
cout<<"positive";
}
else if(number == 0){
cout<<"zero";
}
else{
cout<<"negative";
}

return 0;}
```



**ALZEEKA Tutorial**



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**<https://alzeeka.github.io/alzeeka/>**