Aror University of Art, Architecture, Design & Heritage Sukkur.

Department of Artificial Intelligence and Multimedia Gaming

Fundamentals of Programming (Fall-2023)

LAB No. 06

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Objective of Lab No. 06:
After performing lab 3, students will be able to:

- Use if-else-if statements in C++
- Use switch-case statements in C++
- Use for loop in C++

1. If-else-if statements in C++:

If-else-if statements in C++ is used when we have multiple outcomes for a problem, the syntax of if-else-if statements is:

```
if (condition)
    statement 1;
else if (condition)
    statement 2;
.
.
else
    statement;
```

Example:

```cpp
#include <iostream>
using namespace std;

int main()
{
    int day;

    cout << "Enter Day Number: ";
    cin >> day;
    cout << "Day is ";

    if (day == 1)
        cout << "Sunday" << endl;
    else if (day == 2)
        cout << "Monday" << endl;
    else if (day == 3)
        cout << "Tuesday" << endl;
    else if (day == 4)
        cout << "Wednesday" << endl;
    else if (day == 5)
        cout << "Thursday" << endl;
    else if (day == 6)
        cout << "Friday" << endl;
    else
        cout << "Saturday" << endl;

    return 0;
}
```

2. Switch case statement:

The C++ Switch case statement evaluates a given expression and based on the evaluated value(matching a certain condition), it executes the statements associated with it.

Syntax:

```
switch (expression) {
    case value_1:
        // statements_1;
        break;
    case value_2:
        // statements_2;
        break;
    .....
    .....
    default:
        // default_statements;
        break;
}
```

Example:

```
// C++ program to demonstrate syntax of switch
#include <iostream>
using namespace std;

// Driver Code
int main()
{
    // switch variable
    char x = 'A';

    // switch statements
    switch (x) {
    case 'A':
        cout << "Choise is A";
        break;
    case 'B':
        cout << "Choise is B";
        break;
    case 'C':
        cout << "Choise is C";
        break;
    default:
        cout << "Choice other than A, B and C";
        break;
    }
    return 0;
}
```

For Loop:

C++ for loop is a repetition control structure that allows us to write a loop that is executed a specific number of times. for loop is an entry-controlled loop where the test condition is checked before entering the body.

Syntax:

```
for(initialization; test condition; updation)
{
     // body of for loop
}
```

Example:

```
#include <iostream>

using namespace std;

int main() {
        for (int i = 1; i <= 5; ++i) {
        cout << i << " ";
    }
    return 0;
}
```

You can use for loop without body, you can also use multiple variables in a loop, and you can use increments/decrements both in a loop, if you will omit all three expressions of loop, the loop will run for infinite amount of time. Remember that the loop variables can be local or they can be used from the main function.

Lab Exercises

1. Write a C program to input electricity unit charge and calculate the total electricity bill according to the given condition:
   - For first 50 units Rs. 0.50/unit
   - For next 100 units Rs. 0.75/unit
   - For next 100 units Rs. 1.20/unit
   - For unit above 250 Rs. 1.50/unit
   - An additional surcharge of 20% is added to the bill.

2. Write a program in C to accept a grade and declare the equivalent description using switch-case statement :

Grade	Description
E	Excellent
V	Very Good
G	Good
A	Average
F	Fail

3. Write a program in C to read any digit (0-9) and display it in the word using switch-case statement.

4. Write a C++ program to display n natural numbers, n will be given by the user.

5. Write a C++ program to find sum of first n even natural numbers.

6. Write a C++ program to display the multiplication table of a given number

7. Write down a C++ code to display first n 0dd numbers in reverse order.

8. Write down the C++ code to display multiplication table of given

```
Enter the number for multiplication table: 4
1*4=4
2*4=8
3*4=12
4*4=16
5*4=20
6*4=24
7*4=28
8*4=32
9*4=36
10*4=40
```

9. Write down the C++ code to display the following half-pyramid:

```
*
* *
* * *
* * * *
* * * * *
```