Conditionals & While Loop

1) Conditional Statements:

Conditionals statements are used to execute a particular set of code based on certain condition to be true. There are mainly three conditional statements in C++.

1) If Statement

2) If Else Statement

3) If Else-If Statement

2) If Statement:

```cpp
if(x>0){
    cout<<"Positive Number :)"<<endl;
}
```

3) If Else Statement:

```cpp
if(x>=0){
    cout<<"Positive Number :)"<<endl;
}
else{
    cout<<"Negative Number :("<<endl;
}
```

4) If Else-If Else Statement:

```cpp
if(x>0){
    cout<<"Positive Number :)"<<endl;
}
else if (x<0){
    cout<<"Negative Number :("<<endl;
}
else{
    cout<<"Number is Zero :|"<<endl;
}
```

5) Cin.get() Function:

Cin keyword does not consider space, tab and enter. To make it consider space, tab and enter we have to use Cin.get() function. Cin.get() function return ASCII value of input data.

```cpp
int x;
cout<<"Enter Value :)"<<endl;

x = cin.get();
cout<<x<<endl;
```

6) Question 1:

Write a program to check if the number is positive, negative or zero using conditional statements.

Solution:

```cpp
if(n>0){
    cout<<"Positive Number :)"<<endl;
}
else if(n<0){
    cout<<"Negative Number :)"<<endl;
}
else{
    cout<<"Number is Zero :|"<<endl;
}
```

7) Question 2:

Write a program to check if the character is uppercase, lowercase, digit or special symbol.

Solution:

```cpp
if(ch >= 65 && ch<=90){
    cout<<"Uppercase Character :)"<<endl;
}
else if(ch >= 97 && ch<=122){
    cout<<"Lowercase Character :)"<<endl;
}
else if(ch >= 48 && ch<=57){
    cout<<"Character is Digit :)"<<endl;
}
else{
    cout<<"Character is Special Symbol :)"<<endl;
}
```

8) While Loop:

While loop loops through a block of code as long as a specified condition is true.

Example:

```cpp
int i=1;
while(i<=n){
    cout<<i<<" ";
    i++;
}
```

9) Question 3:

Write a program to find the sum of first n natural numbers.

Solution:

```cpp
int i=1;
int sum = 0;
while(i<=n){
    sum += i;
    i++;
}
cout<<"Sum is "<<sum<<endl;
```

10) Question 4:

Write a program to find the sum of first n even natural numbers.

Solution:

```
int i=2;
int sum = 0;
while(i<=n){
    sum += i;
    i = i+2;
}
cout<<"Sum is "<<sum<<endl;
```

11) Question 5:

Write a program to find the factorial of a number.

Solution:

```
int i=1;
int fact = 1;
while(i<=n){
    fact *= i;
    i++;
}
cout<<"Factorial is "<<fact<<endl;
```

12) Question 6:

Write a program to check if the number is prime or not.

Solution:

```cpp
bool flag = true;

int i=2;
while(i<n){
    if(n%i == 0){
        flag = false;
    }
    i++;
}

if(flag){
    cout<<n<<" is a Prime Number :)"<<endl;
}
else{
    cout<<n<<" is not a Prime Number :)"<<endl;
}
```

13) Question 7:

```
*  *  *  *  *

*  *  *  *  *

*  *  *  *  *

*  *  *  *  *

*  *  *  *  *
```

Solution:

```cpp
int i=1;
while(i<=n){
    int j=1;
    while(j<=n){
        cout<<"*"<<" ";
        j++;
    }
    cout<<endl;
    i++;
}
```

14) Question 8:

```
1 1 1 1 1
2 2 2 2 2
3 3 3 3 3
4 4 4 4 4
5 5 5 5 5
```

Solution:

```cpp
int i=1;
while(i<=n){
    int j=1;
    while(j<=n){
        cout<<i<<" ";
        j++;
    }
    cout<<endl;
    i++;
}
```