

Lecture Notes No. (7-C): Uncountable loops

In the previous lecture, all our loops were using a counter to count the loops sequence.

However, this lecture will present some example where no counter is used.

Exercises:

1. Write a C++ Program that reads an integer number as a decimal number and convert it to a binary number.
2. Write a C++ Program that reads an integer number as a binary number and convert it to a decimal number.
3. Write a C++ Program that reads an integer number reverse the order of its digits.

Solutions:

1.

```
#include<iostream>
using namespace std;
int main()
{
int n,b=0,m=1,r;
cout<<"Enter a Number: ";
cin>>n;
while(n>0)
{
    r = n % 2;
    n = n / 2;
    b = b + r * m;
    m = m * 10;
}
cout<<"The equivalent binary number is "<<b;

return 0;
}
```

2.

```
#include<iostream>
using namespace std;
int main()
{
int n=0,b,m=1,r;
cout<<"Enter a Binary Number: ";
cin>>b;
while(b>0)
{
    r = b % 10;
    b = b / 10;
    n = n + r * m;
    m = m * 2;
}
cout<<"The equivalent binary number is "<<b;

return 0;
}
```

3.

```
#include<iostream>
using namespace std;
int main()
{
int n1,n2=0,r;
cout<<"Enter a Number: ";
cin>>n1;
while(n1>0)
{
    r = n1 % 10;
    n1 = n1 / 10;
    n2 = n2 * 10 + r;
}
cout<<"The reverse number is "<<n2;

return 0;
}
```

Lecture Notes 4: Exit-Controlled Loops

The do while loop works in the same way as the while loop, except that it checks the condition after the code block. It will therefore always run through the code block at least once, in contrast with the while loop. Notice that this loop ends with a semicolon (;).

Example

Write a C++ program that convert the temperature unit from Celsius to Kelvin and from Kelvin to Celsius by displaying a below menu to the user to read their choice:

- | |
|---|
| <ol style="list-style-type: none">1. Celsius to Kelvin2. Kelvin to Celsius |
|---|

Make sure that user do not write a choice other than 1 or 2.

```
#include<iostream>
using namespace std;
int main()
{
double c,k;
int ch;

do{
    cout<<"Select From List: "<<endl;
    cout<<"1. Celsius to Kelvin"<<endl;
    cout<<"2. Kelvin to Celsius"<<endl;
    cout<<"Enter the number of your choice: ";
    cin>>ch;
} while (ch !=1 && ch != 2);

if(ch==1)
{
    cout<<"Temperature in Celsius = ";
    cin>>c;
    k=c+273;
    cout<<"Temperature in Kelvin = "<<k;
}
else
```

```

{
    cout<<"Temperature in Kelvin = ";
    cin>>k;
    c=k-273;
    cout<<"Temperature in Celsius = "<<c;
}

return 0;
}

```

do while loops are used mostly to confirm the user input. In the example above, the user has to enter 1 or 2. If the user entered any other number the program will print the menu again and ask for the correct input. do while is used to confirm if the username and password are correct or not and if the user wants to repeat some tasks.

Example No. 2

Write C++ program to find the summation of two numbers. The program should not terminate directly but instead prompt the user to choose to continue or not.

```

#include<iostream>
using namespace std;
int main()
{
double a,b,c;
int ch;
do {
cout<<"First Number";
cin>>a;
cout<<"Second Number";
cin>>b;
c = a + b;
cout<<"Result = "<<c<<endl;

cout<<"Do you want to continue?"<<endl;
cout<<"1. Yes 2. No"<<endl;
cin>>ch;
} while (ch==1);

```

```
return 0;
}
```

break & continue

There are two jump statements that can be used inside loops: **break** and **continue**. The **break** keyword ends the loop structure, and **continue** skips the rest of the current iteration and continues at the beginning of the next iteration.

Example 1:

using break

```
#include<iostream>
using namespace std;
int main()
{
    for(int i=1;i<=5;i++)
    {
        if(i==3)
        {
            break;
        }
        cout<<i<<endl;
    }
    return 0;
}
```

using continue

```
#include<iostream>
using namespace std;
int main()
```

```

{
    for(int i=1;i<=5;i++)
    {
        if(i==3)
        {
            continue;
        }
        cout<<i<<endl;
    }
    return 0;
}

```

Example 2:

using break

```

#include<iostream>
using namespace std;
int main()
{
    for(int i=1;i<=5;i++)
    {
        for(int j=1;j<=5;j++)
        {
            if(i==j)
            {
                break;
            }
            cout<<j;
        }
    }
}

```

```
}  
return 0;  
}
```

using continue

```
#include<iostream>  
using namespace std;  
int main()  
{  
    for(int i=1;i<=5;i++)  
    {  
        for(int j=1;j<=5;j++)  
        {  
            if(i==j)  
            {  
                continue;  
            }  
            cout<<j;  
        }  
    }  
    return 0;  
}
```