



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING

CS-114 - Fundamental of Programing

LAB MANUAL # 3

ME -15 (C)

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1. Write a C++ program to print the total number of population in Punjab, Sindh, KPK, and Balochistan using a switch case.

This program is built to show the population of provinces of Pakistan (Punjab, Sindh, Balochistan, KPK). In this scenario we will use switch case statement. For a particular condition, the switch statement runs and then it will check different cases which are defined in program.

CODE:

```
1  #include<iostream>
2  using namespace std;
3
4  int main(){
5      int Punjab, Sindh, KPK, Balochistan;//variables for provinces population
6      Punjab = 127474000;//punjab population
7      Sindh = 57931907;//sindh population
8      KPK = 30523371;//kpk population
9      Balochistan = 14894402;//balochistan population
10     cout<<"Put number to get information about population as described below \n";
11     int X;
12     cout<<"Put 1 for Punjab \n";//1 to get population of punjab
13     cout<<"Put 2 for Sindh \n";//2 to get population of sindh
14     cout<<"Put 3 for KPK \n";//3 to get population of kpk
15     cout<<"Put 4 for Balochistan \n";//4 to get population of balochistan
16     cout<<"Enter number ";//enter any number from above numbers
17     cin>>X;
18     switch (X){          //switch statement to give user desired result
19     case 1:              //if user want population of punjab
20         cout<<"Population of Punjab is "<<Punjab;
21         break;
22     case 2:              //if user want population of sindh
23         cout<<"Population of Sindh is "<<Sindh;
24         break;
25     case 3:              //if user want population of kpk
26         cout<<"Population of KPK is "<<KPK;
27         break;
28     case 4:              //if user want population of balochistan
29         cout<<"Population of Balochistan is "<<Balochistan;
30         break;
31     default:            //if user entered any number other than 1 to 4
32         cout<<"Enter a valid number between 1 to 4 ";
33     }
34     return 0;
35 }
36 }
```

RESULTS:

```
Put number to get information about population as described below
Put 1 for Punjab
Put 2 for Sindh
Put 3 for KPK
Put 4 for Balochistan
Enter number 3
Population of KPK is 30523371
-----
Process exited after 7.869 seconds with return value 0
Press any key to continue . . .
```

```
Put number to get information about population as described below
Put 1 for Punjab
Put 2 for Sindh
Put 3 for KPK
Put 4 for Balochistan
Enter number 1
Population of Punjab is 127474000
-----
Process exited after 4.296 seconds with return value 0
Press any key to continue . . .
```

```
Put number to get information about population as described below
Put 1 for Punjab
Put 2 for Sindh
Put 3 for KPK
Put 4 for Balochistan
Enter number 2
Population of Sindh is 57931907
-----
Process exited after 4.934 seconds with return value 0
Press any key to continue . . .
```

```
Put number to get information about population as described below
Put 1 for Punjab
Put 2 for Sindh
Put 3 for KPK
Put 4 for Balochistan
Enter number 4
Population of Balochistan is 14894402
-----
Process exited after 30.54 seconds with return value 0
Press any key to continue . . .
```

2. Write a C++ program to check whether an alphabet is a vowel or consonant using a switch case.

In this question, a program is needed, which can check whether an entered character is vowel or consonant. If it is vowel then it will show that it is vowel, otherwise consonant. Switch case statement will be used for decision. The code and results are shown below:

CODES:

```
1  #include<iostream>
2  using namespace std;
3
4  int main(){
5      char X;
6      cout<<"Enter any character of english alphabets ";
7      cin>>X;          //input assigned
8      switch (X) {
9          case 'a':      //when X is a then vowel
10             cout<<X<<" is vowel";
11             break;
12          case 'e':      //when X is e then vowel
13             cout<<X<<" is vowel";
14             break;
15          case 'i':      //when X is i then vowel
16             cout<<X<<" is vowel";
17             break;
18          case 'o':      //when X is o then vowel
19             cout<<X<<" is vowel";
20             break;
21          case 'u':      //when X is u then vowel
22             cout<<X<<" is vowel";
23             break;
24          case 'A':      //when X is A then vowel
25             cout<<X<<" is vowel";
26             break;
27          case 'E':      //when X is E then vowel
28             cout<<X<<" is vowel";
29             break;
30          case 'I':      //when X is I then vowel
31             cout<<X<<" is vowel";
32             break;
33          case 'O':      //when X is O then vowel
34             cout<<X<<" is vowel";
35             break;
36          case 'U':      //when X is U then vowel
37             cout<<X<<" is vowel";
38             break;
39
40          default:
41             cout<<"This is a consonant"; //for all chracters other than vowels
42
43      }
44      return 0;
45 }
```

RESULTS:

```
Enter any character of english alphabets a
a is vowel
-----
Process exited after 3.948 seconds with return value 0
Press any key to continue . . .
```

```
Enter any character of english alphabets b
This is a consonant
-----
Process exited after 3.752 seconds with return value 0
Press any key to continue . . .
```

```
Enter any character of english alphabets j
This is a consonant
-----
Process exited after 4.684 seconds with return value 0
Press any key to continue . . .
```

```
Enter any character of english alphabets e
e is vowel
-----
Process exited after 3.074 seconds with return value 0
Press any key to continue . . .
```

3. Write a C++ program to check whether a number is positive, negative, or zero using a switch case.

This program will take a input from user and decide whether a number is positive, negative or zero. For the decision process the program will use switch case statement. Code and result is shown below:

CODE:

```
1  #include<iostream>
2  using namespace std;
3
4  int main(){
5      int X;
6      cout<<" Enter a number = "; //number entered
7      cin>>X;                      //number assigned to x
8      int z;                       //integer to whom result to be assigned
9      if(X>0) {                    //first condition if x>0 then value of z will be -1
10         z=1;
11     }
12     else if(X<0){                //second condition if x<0 then value of z will be 1
13         z=-1;
14     }
15     else{
16         z=0; //if x=0 then z=0
17     }
18
19
20     switch(z){
21         case 1: //when z=1 then go to case 1
22             cout<<"Positive number";
23             break;
24         case 0:
25             cout<<"zero"; //when z=0 then go to case 0
26             break;
27         case -1:
28             cout<<"negative number"; //when z=-1 then go to case -1
29             break;
30     }
31     return 0;
32 }
```


RESULTS:

```
Enter a number = 8
Positive number
-----
Process exited after 4.831 seconds with return value 0
Press any key to continue . . .

Enter a number = -100
negative number
-----
Process exited after 11.09 seconds with return value 0
Press any key to continue . . .

Enter a number = 0
zero
-----
Process exited after 5.644 seconds with return value 0
Press any key to continue . . .
```

4. Write a C++ to find out whether a person is an adult, teenager, or child using nested if-else.

In this program, the user will enter its age and computer will decide whether the user is adult, teenager or child depending upon the user's age. For this purpose, nested-if statement will be used. Code and results are shown below:

CODES:

```
1  #include<iostream>
2  using namespace std;
3
4  int main(){
5      float age;
6      cout<<"Enter your age = ";//asking to input age
7      cin>>x;
8      if(age>12){
9          if(age>=19){                //condition to check whether child, teenager or adult
10             cout<<"You are an adult ";//if age>=19
11         }
12         else{
13             cout<<"You are a teenager ";//if 12<age<=19
14         }
15     }
16     else{
17         cout<<"You are a child ";//if age<=12
18     }
19     return 0;
20 }
```

RESULTS:

```
Enter your age = 30
You are an adult
-----
Process exited after 7.22 seconds with return value 0
Press any key to continue . . .

Enter your age = 14
You are a teenager
-----
Process exited after 3.488 seconds with return value 0
Press any key to continue . . .

Enter your age = 10
You are a child
-----
Process exited after 20.78 seconds with return value 0
Press any key to continue . . .
```

5. Write a C++ program that takes three number from the user and find the greatest number out of the three numbers using nested if-else statements.

This program is built to decide which number is greatest. It check all three inputs and gives output, the number which will be greater than all. For this purpose, nested if statement will be used as mentioned in question.

CODE:

```
1  #include<iostream>
2  using namespace std;
3
4  int main(){
5      int m,n,o;
6      cout<<"enter 1st numbers \n";//enter first number
7      cin>>m;
8      cout<<"enter 2nd number \n";//enter 2nd number
9      cin>>n;
10     cout<<"enter 3rd number \n";//enter 3rd number
11     cin>>o;
12     if (m>=0||m<0||n>=0||n<0||o>=0||o<0){ //enter any three values this condition satisfies
13         if(m>n&& m>o) //if m is greater than n and o
14             cout<<"m = "<<m<<" is largest";
15         if(n>m&& n>o) //if n is greater than m and o
16             cout<<"n = "<<n<<" is largest";
17         else //if o is greater than m and n
18             cout<<"o = "<<o<<" is largest";
19     }
20     return 0;
21 }
```

RESULTS:

```
enter 1st numbers
-190
enter 2nd number
200
enter 3rd number
309
309 is largest
-----
Process exited after 12.41 seconds with return value 0
Press any key to continue . . .
```

6. Write a C++ program to check whether the alphabet entered by the user is Vowel or Consonant using nested if-else.

This program is similar to one the question stated above. The main difference is that it does not use switch case statement. Rather than that, it uses nested-if statement to decide about vowel or consonant. The code and results are given below:

CODE:

```
1 #include<iostream>
2 using namespace std;
3
4 int main(){
5     char w;
6     cout<<"Enter any character from English alphabets ";//assigning a character to W
7     cin>>w;
8     if ((w>'a'&&w<'z')||((w>'A'&&w<'Z'))){ //first condition to check it is a alphabet
9         if(w=='i' || w=='a' || w=='e' || w=='o' || w=='u' || w=='A' || w=='E' || w=='I' || w=='O' || w=='U'){//if the character belongs to vowels, vowel will show on screen
10             cout<<"It is a vowel alphabet ";
11         }
12         else //if it is not a vowel then it is consonant
13             cout<<"It is a consonant alphabet";
14     }
15     else //if character is not english alphabet
16         cout<<"Please enter a character from english alphabets irrespective of its case(upper case or lower case)";
17     return 0;
18 }
```

RESULTS:

```
Enter any character from English alphabets J
It is a consonant alphabet
-----
Process exited after 6.096 seconds with return value 0
Press any key to continue . . .
```

```
Enter any character from English alphabets a
It is a vowel alphabet
-----
Process exited after 2.897 seconds with return value 0
Press any key to continue . . .
```