# *National University of Science and Technology*

## School of Mechanical and Manufacturing Engineering

# Assignment #03

## CS-114 Fundamentals of Programming

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**Introduction:**

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# Task 1:

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

# Solution:

```cpp
//Task 1 Program To Print Population of Punjab, Sindh , KPK , Balochistan
#include <iostream>
using namespace std;
int main(){
//This is Population of each province as of 2023.
    int Population_Punjab=127688922 ,Population_Sindh=  55696147 ,Population_KPK=   40856097,Population_Balochistan=14894402;
char Code;
cout<<"Enter The Province Code: "<<endl;
cout<<"( P or p for Punjab,S or s for Sindh,K or k for KPK, B or b For Balochistan) "<<endl;
cin>>Code;
switch(Code){  //The Particular character associated with a Province when entered will print the Population of Respective Province
    case 'P' :
    case 'p' :
    cout<<"The Population of Punjab is "<<Population_Punjab<<endl;
    break;
    case 'S':
        case 's':
    cout<<"The Population of Sindh is "<<Population_Sindh<<endl;
    break;
    case 'K':
        case 'k' :
        cout<<"The Population of KPK is "<<Population_KPK<<endl;
        break ;
        case 'B':
        case 'b' :
        cout<<"The Population of Balochistan is "<<Population_Balochistan<<endl;
            break;
            default:    cout<<"Enter A Valid Code";
            break;
}
return 0;
}
```

# Result:

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe
Enter The Province Code:
( P or p for Punjab,S or s for Sindh,K or k for KPK, B or b For Balochistan)
P
The Population of Punjab is 127688922

--------------------------------
Process exited after 10.34 seconds with return value 0
Press any key to continue . . .
```

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe
Enter The Province Code:
( P or p for Punjab,S or s for Sindh,K or k for KPK, B or b For Balochistan)
s
The Population of Sindh is 55696147

--------------------------------
Process exited after 4.516 seconds with return value 0
Press any key to continue . . .
```

## Task 2:

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

## Solution:

```
//Task 2 Program to find if a given character is vowel or a cosonant
#include <iostream>
using namespace std;
int main(){
    char Alphabet;
    cout<<"Enter A Single Alphabet:";
    cin>>Alphabet;
    switch(Alphabet){  //When An Alphabet from Below list is entered it will output Vowel
        case 'A':
        case 'a':
        case 'E':
        case 'e':
        case 'I':
        case 'i':
        case 'O':
        case 'o':
        case 'U':
        case 'u':
        cout<<"The Given Alphabet " <<Alphabet<< " is A Vowel.";
        break;
        default :   //Using Switch again to make sure only a alphabet is entered and if some other character is entered it wont give an output.
                switch(Alphabet){  //If An alphabet from below list is input excluding the ones that are already used above.It will Output Consonant
                case 'b' ... 'z':
                case 'B' ... 'Z':
                cout<<"The Given Alphabet "<<Alphabet<< " is A Consonant";
                break;
                default:
                cout<<"Invalid Input.Please Enter A Valid Alphabet";
                }
    }

return 0;
}
```

## Result:

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe
Enter A Single Alphabet:A
The Given Alphabet A is A Vowel.
--------------------------------
Process exited after 3.842 seconds with return value 0
Press any key to continue . . .
```

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe
Enter A Single Alphabet:t
The Given Alphabet t is A Consonant
--------------------------------
Process exited after 14.02 seconds with return value 0
Press any key to continue . . .
```

## Task 3:

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

## Solution:

```cpp
//Task 3 Program To Check Whether A Given Number is Positive, Negative or zero
#include <iostream>
using namespace std;
int main(){
    int Number;
    cout<<"Enter The Number: ";
    cin>>Number;
    switch(Number>0){
    case 1:
        cout<<"The Number "<<Number<<" Is Positive."<<endl;    //When the Number is greater than is zero it will output positive number
    break;
    case 0:
    switch(Number<0){
        case 1:
        cout<<"The Number "<<Number<<" Is Negative."<<endl; //When The Number is Smaller than zero it will output negative number
        break;
            case 0:
        cout<<"The Number "<<Number<< " Is Zero."<<endl;
        break;
        }
        }
return 0;
}
```

## Result:

C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe

```
Enter The Number: 89
The Number 89 Is Positive.

--------------------------------
Process exited after 8.427 seconds with return value 0
Press any key to continue . . .
```

C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe

```
Enter The Number: -786
The Number -786 Is Negative.

--------------------------------
Process exited after 4.834 seconds with return value 0
Press any key to continue . . .
```

## Task 4:

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

## Solution:

```cpp
//Task 4 Program To Check Whether A Person Is An Adult,Teenager Or a Child
#include <iostream>
using namespace std;
int main(){
int Age;
cout<<"Enter the Age of the Person: ";  //Child  = From 0 to 12 Years
cin>>Age;                               //Teenager = From 13 to 19 years
if(Age>0){
    if(Age<=12){                        //Adult = Greater From 20 Years To 120 Years(Approximating the Max Age Of A Human)
    cout<<"Child"<<endl;}
    else if(Age>=13&&Age<=19){
        cout<<"Teenager"<<endl;
}
    else if(Age>=20&&Age<=120){
        cout<<"Adult"<<endl;
    }
    }
else{
    cout<<"Invalid Input.Please Enter Valid Age."<<endl;
}

return 0;
}
```

## Result:

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe
Enter the Age of the Person: 62
Adult

--------------------------------
Process exited after 6.218 seconds with return value 0
Press any key to continue . . .
```

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Home Task 3.exe
Enter the Age of the Person: 12
Child

--------------------------------
Process exited after 2.628 seconds with return value 0
Press any key to continue . . .
```

## Task 5:

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

## Solution:

```cpp
//Task 5 Program That Compares Three Numbers And  Finds The Greatest Of All
#include <iostream>
using namespace std;
int main(){
int num1,num2,num3;
cout<<"Enter The First Number: ";
cin>>num1;
cout<<"Enter The Second Number: ";
cin>>num2;
cout<<"Enter The Third Number: ";
cin>>num3;
    if (num1==num2&&num2==num3){
        cout<<"The Given Numbers Are Equal.";
    } /*If Numbers Are Not Equal And If Num1 is Greater Than Num2 Then The following Nested Else if Loop Executes.*/
    else if(num1>num2){
    if(num1>num3){
        cout<<"The Greatest Number is "<<num1<<endl;
    }
    else if(num3>num1){
        cout<<"The Greatest Number is "<<num3<<endl;
    }
}  /*If Numbers Are Not Equal And If Num2 is Greater Than Num1 Then The following Nested Else if Loop Executes.*/
    if(num2>num1){
        if(num2>num3){
            cout<<"The Greatest Number is "<<num2<<endl;
        }
        else if(num3>num2){
                cout<<"The Greatest Number is "<<num3<<endl;
        }
    }
return 0;
}
```

## Result:

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Untitled.exe
Enter The First Number: 4
Enter The Second Number: 5
Enter The Third Number: 9
The Greatest Number is 9

--------------------------------
Process exited after 5.374 seconds with return value 0
Press any key to continue . . .
```

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Untitled.exe
Enter The First Number: 8
Enter The Second Number: 6
Enter The Third Number: 534
The Greatest Number is 534

--------------------------------
Process exited after 20.42 seconds with return value 0
Press any key to continue . . .
```

## Task 6:

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

## Solution:

```
//Task 6 Program To Check Whether If Given Alphabet is Vowel Or a Consonant
#include <iostream>
using namespace std;
int main(){
char Alphabet;
cout<<"Enter The Alphabet: ";
cin>>Alphabet;
if(Alphabet>='A'&&Alphabet<='Z'||Alphabet>='a'&&Alphabet<='z'){
    // The First If Statement Ensures That The Given Character Is An Alphabet
    if(Alphabet=='A'||Alphabet=='a'||Alphabet=='E'||Alphabet=='e'||Alphabet=='I'||Alphabet=='i'
    ||Alphabet=='O'||Alphabet=='o'||Alphabet=='U'||Alphabet=='u'){
    //If The Given Alphabet Is From The Above List It Will Output It As A Vowel.
    cout<<"The Given Alphabet "<<Alphabet<<" is a Vowel."<<endl;
}
else if(Alphabet>='B'||Alphabet<='Z'||Alphabet>='b'||Alphabet<='z'){
    cout<<"The Given Alphabet "<<Alphabet<<" is a Consonant."<<endl;
} //Otherwise The Alphabet Is A Consonant.
}
else{
    cout<<"Invalid Input.Enter A Valid Alphabet."<<endl;
}

return 0;
}
```

## Result:

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Untitled32.exe
Enter The Alphabet: A
The Given Alphabet A is a Vowel.

--------------------------------
Process exited after 36.93 seconds with return value 0
Press any key to continue . . .
```

```
C:\Users\zennshi\Documents\Programming\Home Task 3\Untitled32.exe
Enter The Alphabet: t
The Given Alphabet t is a Consonant.

--------------------------------
Process exited after 2.148 seconds with return value 0
Press any key to continue . . .
```