Fundamentals of Programming

Home Task # 3

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Batch	ME-15
Sec	A
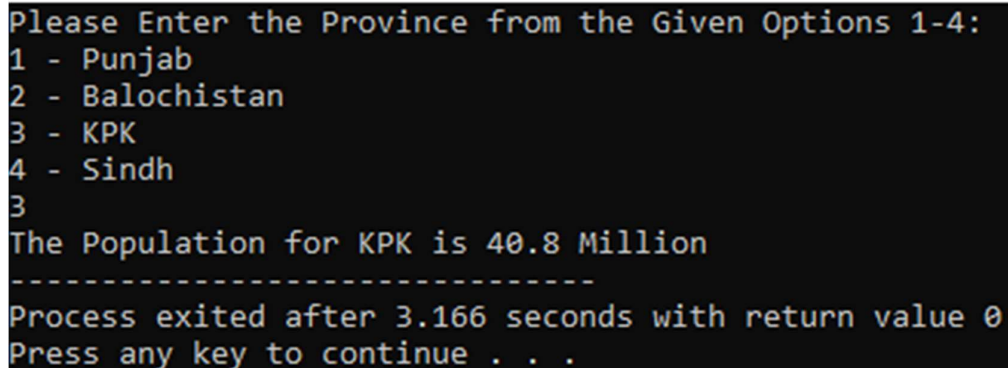
Task # 1:

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

int main(){
    int x;
    cout<< "Please Enter the Province from the Given Options 1-4: "<<endl;
    cout<<"1 - Punjab"<<endl;
    cout<<"2 - Balochistan"<<endl;
    cout<<"3 - KPK"<<endl;
    cout<<"4 - Sindh"<<endl;
    cin>> x;
    //Giving options for the Input and taking as an integer in variable x
    switch(x){
        //switch for integer x and case of 1-4 as entered by user
        case 1:
            cout<<"The Population for Punjab is 110 Milion";
            break;
        case 2:
            cout<<"The Population for Balochistan is 21.7 Million";
            break;
        case 3:
            cout<<"The Population for KPK is 40.8 Million";
            break;
        case 4:
            cout<<"The Population for Sindh is 47.9 Million";
            break;
        default: //default case incase entered input is not as required e.g 9
            cout<<"Entered input is Invalid";
    }

    return 0;
}
```

TASK 1 CONSOLE:

```
Please Enter the Province from the Given Options 1-4:
1 - Punjab
2 - Balochistan
3 - KPK
4 - Sindh
3
The Population for KPK is 40.8 Million
----------------------------------
Process exited after 3.166 seconds with return value 0
Press any key to continue . . .
```
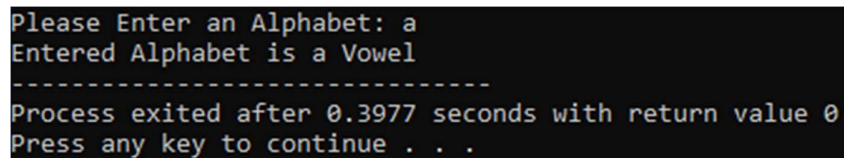
Figure 1: Checking with Input 3 (KPK)

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Figure 2: Checking with Input 1 (Punjab)

Figure 3: Checking with Input 2 (Balochistan)

Figure 4: Checking with Input 4 (Sindh)

Task # 2:

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

int main(){
    char x;
    cout<<"Please Enter an Alphabet: ";
    cin>>x;
    //taking input of a character datatype variable for switch
    switch(tolower(x)){ //lowering the character to eliminate capital case!
        case 'a': case 'e': case'i': case'o': case 'u':
        //case for vowel
            cout<< "Entered Alphabet is a Vowel";
            break;
        default:
            if (isalpha(x)){ //checking if alphabet
                cout<<"Alphabet is a Consonant"; // consonant
            }
            else{
                cout<<"Invalid Input"; // entered input is not a character
            }
    }
    return 0;
}
```
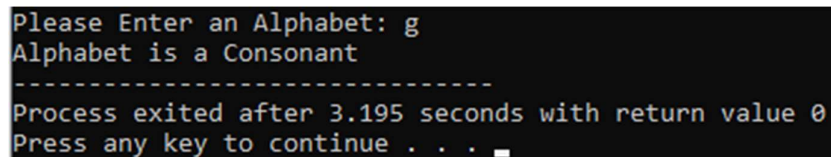
TASK #2 CONSOLE WINDOW:

```
Please Enter an Alphabet: a
Entered Alphabet is a Vowel
---------------------------------
Process exited after 0.3977 seconds with return value 0
Press any key to continue . . .
```
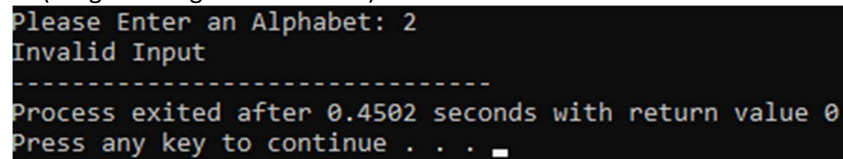
Figure 5: Checking Vowel Input (a)

```
Please Enter an Alphabet: g
Alphabet is a Consonant
---------------------------------
Process exited after 3.195 seconds with return value 0
Press any key to continue . . . _
```

Figure 6: Checking Consonant Input (g)

```
Please Enter an Alphabet: 2
Invalid Input
-----------------------------------
Process exited after 0.4502 seconds with return value 0
Press any key to continue . . .
```

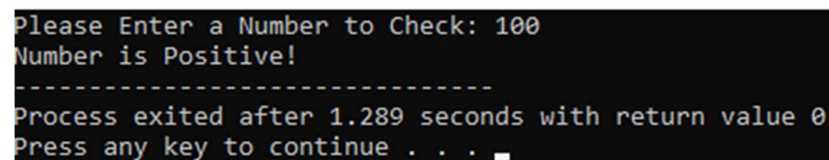*Figure 7: Invalid Input (/)*

Task #3:

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

int main(){
    int x;
    cout<<"Please Enter a Number to Check: ";
    cin>>x;
    //taking input of an integer and using if-then-else to check if it is positive/negative
    if (x>0){
        x=1;
    }
    else if (x<0){
        x=-1;
    }
    switch(x){
        //switch for x for cases
        case 1:
            cout<<"Number is Positive!";
            break;
        case 0:
            cout<<"Number is Zero!";
            break;
        case -1:
            cout<<"Number is Negative!";
            break;
        default:
            cout<<"Error";
            break;
            //default case just for formality but it wont be used
    }

return 0;

}
```

TASK #3 CONSOLE WINDOW

```
Please Enter a Number to Check: 100
Number is Positive!
-----------------------------------
Process exited after 1.289 seconds with return value 0
Press any key to continue . . .
```

Figure 8: Positive Number Input (100)

```
Please Enter a Number to Check: 0
Number is Zero!
--------------------------------
Process exited after 0.614 seconds with return value 0
Press any key to continue . . .
```

Figure 9: Zero Input (0)

```
Please Enter a Number to Check: -3123
Number is Negative!
--------------------------------
Process exited after 1.109 seconds with return value 0
Press any key to continue . . .
```

Figure 10: Negative Input (-3123)

TASK #4:

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

int main(){
    int age;
    cout<<"Please Enter your Age: ";
    cin>>age;
    //asked age and checked if child, teenager or adult
    if(age<13){
        cout<<"You are a Child!";
    }
    else{
        if(age>=13 && age<=19){
            cout<<"You are a Teenager!";
        }
        else{
            cout<<"You are an Adult!";
        }
    }

    return 0;
}
```

TASK #4 CONSOLE WINDOW

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```
Please Enter your Age: 22
You are an Adult!
---------------------------------
Process exited after 0.5532 seconds with return value 0
Press any key to continue . . . _
```

Figure 11: Checking Adult Age (22)

```
Please Enter your Age: 8
You are a Child!
---------------------------------
Process exited after 5.28 seconds with return value 0
Press any key to continue . . .
```

Figure 12: Checking Child (8)

```
Please Enter your Age: 15
You are a Teenager!
---------------------------------
Process exited after 0.4758 seconds with return value 0
Press any key to continue . . .
```

Figure 13: Checking Teenager (15)

TASK #5:

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

int main(){
    int a,b,c;
    cout<<"Please Input Number A: ";
    cin>>a;
    cout<<"Please Input Number B: ";
    cin>>b;
    cout<<"Please Input Number C: ";
    cin>>c;
    //inputted 3 numbers and used if else to check the largest number
    if(a>b){
        if(a>c){
            cout<<"A is Greatest!";
        }
        else{
            cout<<"C is Greatest!";
        }
    }
    else if(b>a){
        if(b>c){
            cout<<"B is Greatest!";
        }
        else{
            cout<<"C is Greatest!";
        }
    }
    else if(a==b){
        if(c>b){
            cout<<"C is Greatest!";
        }
    }
    return 0;
}
```

TASK #5 CONSOLE WINDOW:

```
Please Input Number A: 34
Please Input Number B: 22
Please Input Number C: 56
C is Greatest!
--------------------------------
Process exited after 3.737 seconds with return value 0
Press any key to continue . . .
```

Figure 14: Checking 3 Numbers (C Greatest)

```
Please Input Number A: 44
Please Input Number B: 1
Please Input Number C: 0
A is Greatest!
--------------------------------
Process exited after 4.424 seconds with return value 0
Press any key to continue . . .
```

Figure 15Checking 3 Numbers (A Greatest)

```
Please Input Number A: 45
Please Input Number B: 77
Please Input Number C: 32
B is Greatest!
--------------------------------
Process exited after 58.84 seconds with return value 0
Press any key to continue . . .
```

Figure 16: Checking 3 Numbers (B Greatest)

TASK #6:

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

int main(){
    char x;
    cout<<"Please input a Character: ";
    cin>>x;
    //taking input as char and using first if to check if input is alphabet
    if(isalpha(x)){
        if(x=='a' || x=='e' || x=='i' || x=='o' || x=='u'){
        //for case of vowel used nested if
            cout<<"Entered Character is a Vowel";
        }
        else{
            //else consonant in all case
            cout<<"Entered Character is a Consonant";
        }

    }
    else{
        //if entered input not alphabet invalid error occurs
        cout<<"Invalid Input!";
    }
    return 0;
}
```

TASK #6 CONSOLE WINDOW:

```
Please input a Character: e
Entered Character is a Vowel
---------------------------------
Process exited after 0.7697 seconds with return value 0
Press any key to continue . . .
```

Figure 17: Checking Vowel (e)

```
Please input a Character: b
Entered Character is a Consonant
---------------------------------
Process exited after 0.411 seconds with return value 0
Press any key to continue . . .
```

Figure 18: Checking Consonant (b)

```
Please input a Character: /
Invalid Input!
---------------------------------
Process exited after 0.735 seconds with return value 0
Press any key to continue . . . _
```

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