CS-114 - Fundamental of Programing

Home Tasks - 3
(Lab Manual 3)

Course Instructor: Dr Jawad Khan

Lab Instructor: Muhammad Affan

Student Name: **Ahmed Adil Hussain**

CMS ID: **477537**

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HOME TASK 1:

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

Explanation:

The code takes the initial of the chosen province as input, and stores it as the variable p. It then prints out the population using the switch-case statement. The population values are taken from the 2017 Census.
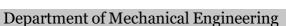
Code:

```cpp
#include <iostream>

using namespace std;
int main()
{
    // HOME TASK 1
    char p;
    cout<<"Please enter the initial of the province."<<endl;
    cin>>p;
    switch(p){
        case 's':
        cout<<"The population of Sindh is 47,854,510"<<endl;
        break;
        case 'b':
        cout<<"The population of Balochistan is 12,335,129 "<<endl;
        break;
        case 'p':
        cout<<"The population of Punjab is 109,989,655"<<endl;
        break;
        case 'k':
        cout<<"The population of KPK is 30,508,920 "<<endl;
        break;
        default:
        cout<<"Please enter a valid initial."<<endl;
        break;
    }
    cout<<"All values are from the 2017 Census"<<endl;
    return 0;
}
```

Result:

```
Please enter the initial of the province.
s
The population of Sindh is 47,854,510
All values are from the 2017 Census

--------------------------------
Process exited after 414.1 seconds with return value 0
Press any key to continue . . .
```

HOME TASK 2:

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

Explanation:

The code takes the alphabet as input, and stores it as the variable al. It then prints out the result using a switch-case statement, which determines if it's a vowel or consonant.
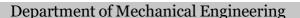
Code:

```cpp
1    #include <iostream>
2
3    using namespace std;
4    int main()
5    {
6    //  HOME TASK 2
7        char al;
8        cout<<"Please enter the alphabet."<<endl;
9        cin>>al;
10       switch(al){
11           case 'a':
12           cout<<"The alphabet is a vowel"<<endl;
13           break;
14           case 'e':
15           cout<<"The alphabet is a vowel"<<endl;
16           break;
17           case 'i':
18           cout<<"The alphabet is a vowel"<<endl;
19           break;
20           case 'o':
21           cout<<"The alphabet is a vowel"<<endl;
22           break;
23           case 'u':
24           cout<<"The alphabet is a vowel"<<endl;
25           break;
26           default:
27           cout<<"The alphabet is a consonant"<<endl;
28           break;
29
30       return 0;
31   }
32   }
```

Result:

```
Please enter the alphabet.
i
The alphabet is a vowel

--------------------------------
Process exited after 16.08 seconds with return value 0
Press any key to continue . . .
```

HOME TASK 3:

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

Explanation:

After the integer is input, its set as the value of the integer variable x. If x is positive, variable d is set to 1. If x is 0, then d is also set to 0. Finally, if x is negative, d is set to -1. Using a switch-case statement, the value of d is used to output the correct analysis.

Code:

```cpp
#include <iostream>

using namespace std;
int main()
{
// HOME TASK 3
    int x;
    int d;
    cout<<"Please enter the integer."<<endl;
    cin>>x;
    if(x > 0){
        d = 1;}
    else{
        if(x < 0){
            d = -1;}
        else{d = 0;}
    }
    switch(d){
        case 1:
        cout<<"the integer is positive"<<endl;
        break;
        case -1:
        cout<<"the integer is negative"<<endl;
        break;
        case 0:
        cout<<"the integer is equal to 0"<<endl;
        break;
        default:
        cout<<""<<endl;
        break;
    }

    return 0;
}
```

Result:

```
Please enter the integer.
-9
the integer is negative

------------------------------
Process exited after 3.326 seconds with return value 0
Press any key to continue . . .
```

HOME TASK 4:

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

Explanation:

The age is input and set as the value for the variable x. If the age is less then or equal to 12, the person is a child. If not, a nested if-else statement analyses whether if the age is that of a teenager (13-19) or of an adult (20 and above). The code rejects negative values.
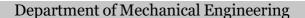
Code:

```cpp
1    #include <iostream>
2
3    using namespace std;
4    int main()
5    {
6    //  HOME TASK 4
7        int x;
8        cout<<"Please enter the age."<<endl;
9        cin>>x;
10       if(x<0){
11               cout<<"Please enter a valid age."<<endl;}
12       else{
13           if(x <= 12){
14               cout<<"This person is a child."<<endl;}
15           else{
16               if(x > 12 && x < 20){
17                   cout<<"This person is a teenager."<<endl;}
18               else{cout<<"This person is an adult."<<endl;}}
19       }
20
21       return 0;
22   }
```

Result:

```
Please enter the age.
13
This person is a teenager.

--------------------------------
Process exited after 1.277 seconds with return value 0
Press any key to continue . . .
```

HOME TASK 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.
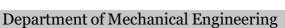
Explanation:

This code considers all possible combinations of the three numbers: one greatest number, two numbers greater than the third, and all three numbers being equal. It uses nested if-else statements to analyze the three integers input as the variables p,q and r; and outputs the relevant analysis.

Code:

```cpp
1    #include <iostream>
2
3    using namespace std;
4    int main()
5    {
6    //  HOME TASK 5
7        int p;
8        int q;
9        int r;
10       cout<<"Please enter the three numbers."<<endl;
11       cin >>p >>q >>r;
12
13       if(p<q && p<r && q == r){
14           cout<<"The second and third numbers are the greatest"<<endl;}
15       else{
16          if(q<p && q<r && p == r){
17              cout<<"The first and third numbers are the greatest"<<endl;}
18          else{
19             if(r<p && r<q && p == q){
20                 cout<<"The first and second numbers are the greatest"<<endl;}
21             else{
22                if(p>q && p>r){
23                    cout<<"The first number is the greatest"<<endl;}
24                else{
25                   if(q>p && q>r){
26                       cout<<"The second number is the greatest"<<endl;}
27                   else{
28                      if(r>p && r>q){
29                          cout<<"The third number is the greatest"<<endl;}
30                      else{
31                          cout<<"The three numbers are equal"<<endl;}
32       return 0;
33       }}}}}}
```

Result:

```
Please enter the three numbers.
1
9
5
The second number is the greatest

--------------------------------
Process exited after 5.461 seconds with return value 0
Press any key to continue . . .
```

HOME TASK 6:

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

Explanation:

The code takes a character as input and assigns it to a variable l. Using nested if-else statements, the variable is tested if it's a vowel or a consonant, the correct statement is output.

Code:

```cpp
#include <iostream>

using namespace std;
int main()
{
//  HOME TASK 6
    char l;
    cout<<"Please enter the alphabet."<<endl;
    cin>>l;
    if (l == 'a'){
        cout<<"The alphabet is a vowel"<<endl;}
    else{
        if (l == 'e'){
            cout<<"The alphabet is a vowel"<<endl;}
        else{
            if (l == 'i'){
                cout<<"The alphabet is a vowel"<<endl;}
            else{
                if (l == 'o'){
                    cout<<"The alphabet is a vowel"<<endl;}
                else{
                    if (l == 'u'){
                        cout<<"The alphabet is a vowel"<<endl;}
                    else{
                        cout<<"The alphabet is a consonant"<<endl;}
    }}}}
    return 0;
}
```

Result:

```
Please enter the alphabet.
i
The alphabet is a vowel

--------------------------------
Process exited after 1.504 seconds with return value 0
Press any key to continue . . .
```