National University of Science and technology

(NUST)

CS-114 - Fundamental of Programing

Lab Manual # 03

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TASK 1:

```cpp
#include <iostream>
using namespace std;
int main(){
    int score;
    cout<<"Enter the score of Student :";
    cin>>score; //taking the score as input
    char grade;
    if (score>= 90 && score<100){
        grade = 'A'; //Assigning grade 'A' if score greater or equal to 90 and less than 100
        cout<<"Grade of the Sutdent is = "<<grade;
    }
    else if(score>= 75 && score<90){
        grade = 'B'; //Assigning grade 'B' if score greater or equal to 75 and less than 90
        cout<<"Grade of the Sutdent is = "<<grade;
    }
    else if( score>= 60 && score<75){
        grade ='C';//Assigning grade 'A' if score greater or equal to 60 and less than 75
            cout<<"Grade of the Sutdent is = "<<grade;
    }
    else if (score>= 45 && score<60){
        grade = 'D';//Assigning grade 'A' if score greater or equal to 45 and less than 60
            cout<<"Grade of the Sutdent is = "<<grade;
    }
    else if(score>= 0 && score<45){
        grade = 'F';//Assigning grade 'A' if score greater or equal to 0 and less than 45
        cout<<"Grade of the Sutdent is = "<<grade;

    }
    else {
        cout<<"ERROR!"<<endl;//if the score values are not between 0 to 100 then there will be no result but an error
cout<<"Please Enter a Valid Score(Between 0 to 100)"<<endl;
    }
    return 0;
}
```

```
C:\Users\ADMIN\OneDrive\Documents\Assigning Grades.exe
Enter the score of Student :45
Grade of the Sutdent is = D
--------------------------------
Process exited after 55.96 seconds with return value 0
Press any key to continue . . .
```

TASK 2:

```cpp
#include <iostream>
using namespace std;
int main(){
    int a;
    cout<<"Enter a number : ";
    cin>>a;// Taking the integer as input fro user
    if(a % 2== 0 && a %5 == 0){//using the if statement to check if the number is divisible by 2 and 5 and if it does then printing statement
        cout<<"Number is both Even and divisible by 5"<<endl;
    }
    else if(a % 2==0&& !a%5 == 0) //using else if statement to check if number divisible by 2 and not divisible by 5
    {
        cout<<"Number is even and but not divisible by 5"<<endl;//then printing this  this statement
    }
    else if(! a % 2== 0 && a % 5 == 0){///using elseif to check if the number is divisible by 5 and not divisible by 2
        cout<<"Nummber is not even but divisible by 5"<<endl;//Then printing this statement
    }
    else{
        cout<<"Nummber is not even and divisible by 5"<<endl;//using 'else' statement to print this statement
    }


    return 0;
}
```

```
C:\Users\ADMIN\OneDrive\Documents\Divisible by 2 and 5.exe
Enter a number : 24
Number is even and but not divisible by 5

--------------------------------
Process exited after 3.743 seconds with return value 0
Press any key to continue . . .
```

TASK 3:

```cpp
#include <iostream>
using namespace std;
int main(){
    float GPA;
    int a;
    cout<<"Enter Student's GPA : ";
    cin>>GPA;                          //Taking 'GPA' as input from user
    cout<<"Enter Student's Attendence(in percentage) :";
    cin>>a;                            //Taking 'attendence' as input from user
    if (GPA >= 3.5 && a >=80){
        cout<<"Student is Eligible for Scholarship"<<endl; // using and logic to check if GPA
}
        else if(GPA>4.0 || a>100){ //usinng if statement and or logic to draw out invalid val
            cout<<"ERROR!"<<endl;
            cout<<"Invalid values"<<endl;
            cout<<"Please enter GPA from 0-4 "<<endl;
            cout<<"and Attendence from 0-100 percent"<<endl;
        }
    else if (!GPA>= 3.5 && a>=80){ // checking if GPA is less than 3.5
        cout<<"Student is not Eligible for Scholarship due to low GPA "<<endl;
    }
    else{ //Checking if attendence is lower than 80%
        cout<<"Student is not Eligible for Scholarship due to low attendence"<<endl;
    }
    return 0;
}
```

```
C:\Users\ADMIN\OneDrive\Documents\Attendence.exe
Enter Student's GPA : 2.78
Enter Student's Attendence(in percentage) :56
Student is not Eligible for Scholarship due to low attendence

--------------------------------
Process exited after 20.17 seconds with return value 0
Press any key to continue . . .
```

TASK 4:

```cpp
#include <iostream>
using namespace std;
int main(){
    char al;// determining al by char
    cout<<"Enter a character :";//taking alphabet as input from user
    cin>>al;
    if (al == 'a' || al =='e' || al=='i' || al=='o' || al=='u' || al=='A' || al=='E' || al=='I' || al =='O' || al=='U' ){ //using or logic to check if al resembles a,e,i,,o,u
        cout<<"The Chracter is a Vowel"<<endl;
    }
    else if ((al >= 'a' && al <='z') &&!( al == 'a' || al =='e' || al=='i' || al=='o' || al=='u' || al=='A' || al=='E' || al=='I' || al =='O' || al=='U') ){
        cout<<"The Character is a Consonant"<<endl; // declaring limit from a to z and using 'not' to sxclude vowels
    }
        else if ((al >= 'A' && al <='Z') &&!( al == 'a' || al =='e' || al=='i' || al=='o' || al=='u' || al=='A' || al=='E' || al=='I' || al =='O' || al=='U') ){
        cout<<"The Character is a Consonant"<<endl;//again declaring limit from A to Z and using 'or','and' and 'not' logic to exclude vowels
    }
    else{ cout<<"Error!"<<endl;// incase of input other than 'a to z' or 'A to Z' error is displayed
    cout<<"Enter a Valid Character"<<endl;
    }

    return 0;
}
```

```
Select C:\Users\ADMIN\OneDrive\Documents\Consonants and vowels L-2.exe
Enter a character :r
The Character is a Consonant

--------------------------------
Process exited after 6.36 seconds with return value 0
Press any key to continue . . .
```

TASK 5:

```cpp
#include <iostream>
using namespace std;
int main(){
int year;
cout<<"Enter the Year : ";
cin>>year;  //taking 'year' as input from user
if( year % 4==0){//using if logic to check if provided year is divisible by '4'
    cout<<"It is a Leap Year"<<endl;//if year is divisible by 4 then printed this
}
else{//if the year is not divisible by 4 then
    cout<<"It is not a leap year"<<endl;//prinnted this statement
}
return 0;
}
```

```
C:\Users\ADMIN\OneDrive\Documents\Leap Year.exe
Enter the Year : 43
It is not a leap year

--------------------------------
Process exited after 13.26 seconds with return value 0
Press any key to continue . . .
```