

# **Fundamentals of Programming**

## **LAB Manual 2**

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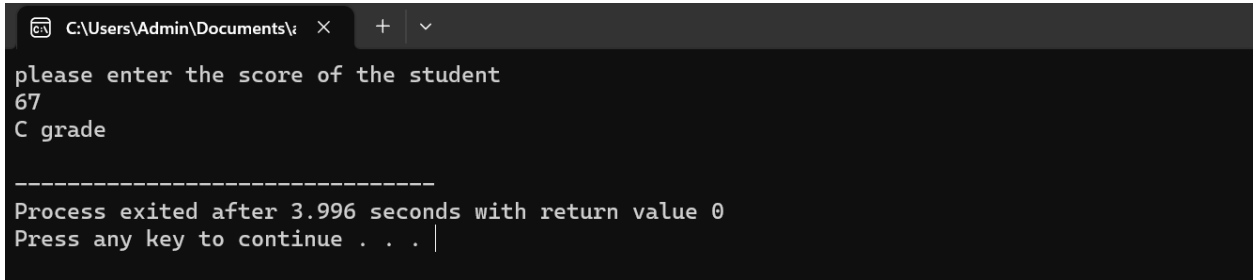
**Class: ME-15 A**

**Roll number: 454502**

1. Create a program that takes a student's score as input and assigns a grade based on predefined criteria using logical operators (e.g., A, B, C, D, F). A-Grade: 90-100 Marks B-Grade: 75-90 Marks C-Grade: 60-75 Marks D-Grade: 45-60 Marks F-Grade: 0-45 Marks

```
int main(){
    int score;
    //asking the user to enter score
    cout<<"please enter the score of the student"<<endl;
    cin>> score;
    //using conditional statement to compare score to
    calculate grade
    if (score>=90 && score<=100)
    {cout<<"A grade"<<endl;
    }
    else if (score>=75&& score<90)
    { cout<<"B grade"<<endl;}
        else if (score>=60&& score<75)
    { cout<<"C grade"<<endl;}
        else if (score>=45&& score<60)
    { cout<<"D grade"<<endl;}
        else if (score>=0&& score<45)
    { cout<<"F grade"<<endl;}
```

```
return 0; }
```



```
C:\Users\Admin\Documents\ >
please enter the score of the student
67
C grade

-----
Process exited after 3.996 seconds with return value 0
Press any key to continue . . . |
```

**2. Write a program that takes an integer as input and determines if it is both even and divisible by 5.**

```
int main(){
    int num;

    //prompt the user to enter number
    cout<<"please enter the number you want to
check"<<endl;

    cin>>num;

    //comparing its remainder after division by 2, to see if its
even using conditional statement
    if (num%2==0){
        //checking if its divisible by 5 or not
        if(num%5==0){cout<<"number is an even number and
is divisible by 5"<<endl;
        }
        else{cout<<"num is even number, but is not divisible by
5"<<endl;
        }
    }
}
```

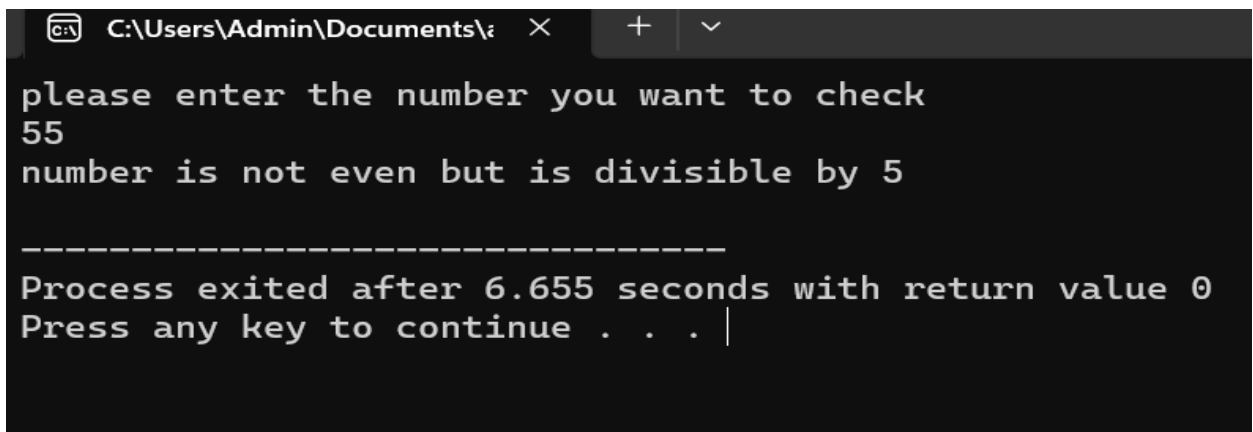
```

        else if (num%5==0){cout<<"number is not even but is
divisible by 5"<<endl;
    }

    else{cout<<"number is neither even, nor divisible by
5"<<endl;
    }

    return 0;

```



```

C:\Users\Admin\Documents\  X  +  v
please enter the number you want to check
55
number is not even but is divisible by 5

-----
Process exited after 6.655 seconds with return value 0
Press any key to continue . . . |

```

### 3. Create a C++ program that checks if a user-provided year is a leap year.

```

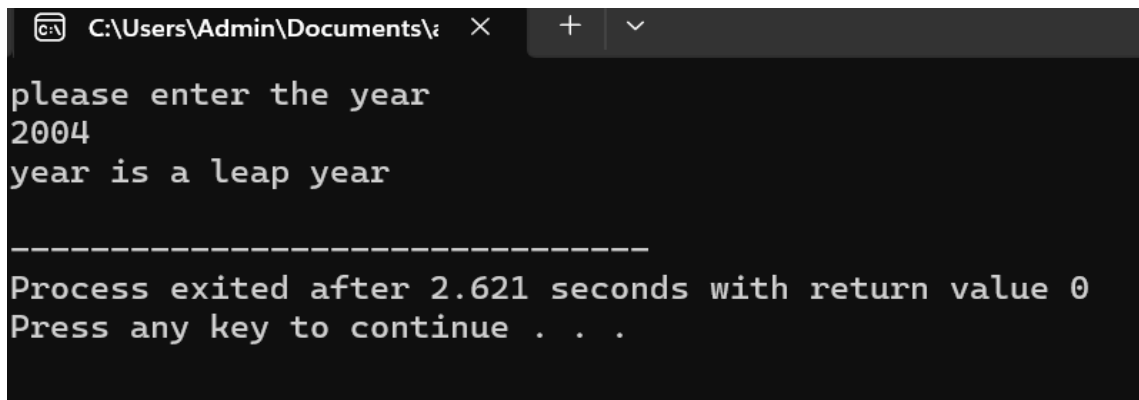
int main(){
    int year;
    //asking user to enter year
    cout<<"please enter the year"<<endl;
    cin>>year;
    //using if statement to check if its leap year
    if (year%4==0 && year%100 !=0)

```

```

//outputting the result
{cout<<"year is a leap year"<<endl;
}
else if (year%400==0){
    cout<<"year is a leap year"<<endl;
}
else{cout<<"year is not a leap year"<<endl;
}
return 0;
}

```



```

C:\Users\Admin\Documents\  X  +  v
please enter the year
2004
year is a leap year

-----
Process exited after 2.621 seconds with return value 0
Press any key to continue . . .

```

4. Create a C++ program that determines if a student is eligible for a scholarship based on their GPA (must have GPA  $\geq 3.5$ ) and attendance (must have attended at least 80% of classes).

```

int main(){
    float gpa;

```

```

    int attendance;

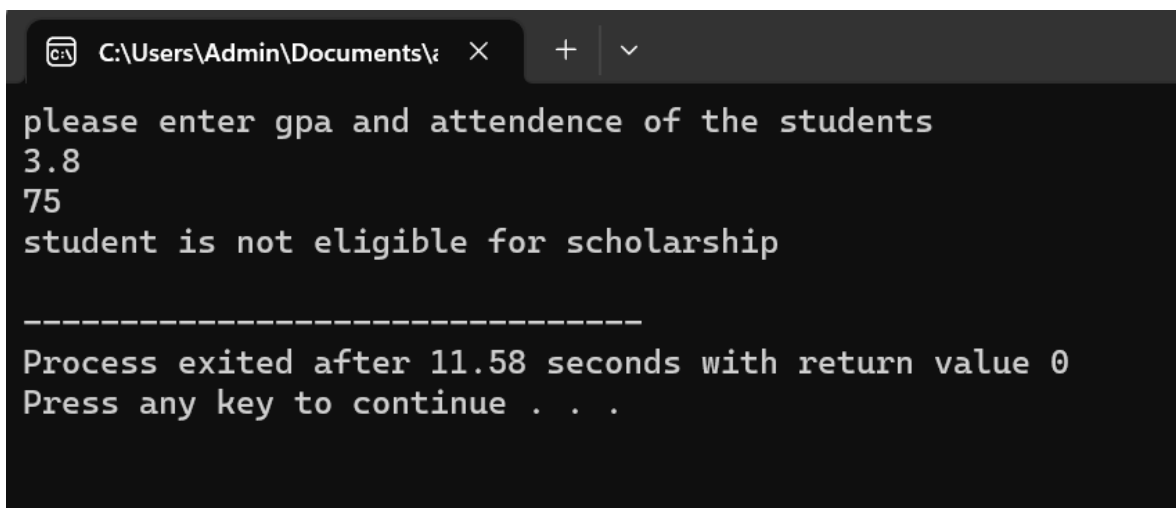
    //asking the user to enter gpa and attendance
    cout<<"please enter gpa and attendance of the
students"<<endl;

    cin>> gpa;
    cin>>attendance;

    //checking if gpa and attendance meets the criteria for
scholarship
    if (gpa>= 3.5 && attendance>=80){
        //outputting results
        cout<<"student is eligible for scholarship"<<endl;
    }
    else{cout<<"student is not eligible for scholarship"<<endl;
    }

    return 0;
}

```



The screenshot shows a Windows command prompt window with the following text:

```

C:\Users\Admin\Documents\>
please enter gpa and attendance of the students
3.8
75
student is not eligible for scholarship

-----
Process exited after 11.58 seconds with return value 0
Press any key to continue . . .

```

**5. Write a program that checks if a given character is a vowel (a, e, i, o, u) or a consonant using logical operators.**

```
int main(){
char character;
cout<<"please enter the alphabet"<<endl;
cin>>character;
if (character=='a' || character=='e' || character=='i' ||
character=='o' || character=='u')
{cout<<"alphabet is vowel"<<endl;
}
else{cout<<"alphabet is consonent"<<endl;
}
return 0;
}
```



C:\Users\Admin\Documents\i



please enter the alphabet

f

alphabet is consonent

-----

Process exited after 4.783 seconds with return value 0

Press any key to continue . . .