OBJECT ORIENTED PROGRAMMING LAB

LAB RECORD

Submitted by
Diwakar Kumar [211B114]

Submitted to: Dr. Kunj Bihari Meena

2022-2023

Department of Computer Science & Engineering JAYPEE UNIVERSITY OF ENGINEERING & TECHNOLOGY, AB ROAD, RAGHOGARH, DT. GUNA-473226 MP, INDIA

Table of Contents

Lab Exercise with topic	Page No.

Lab Exercise 1: Revisiting C

Q1. WAP to find the number of digits in a given number?

```
//***********************************************************
//This program is developed by Diwakar Kumar [211B114]

//***********************************************************

#include <iostream>

using namespace std;

int digitcount() //function declaration and definition
{
   int n;    int
count=0;
   cout<<"Please enter the number whose digits are to be counted:";
cin>>n;    while(n!=0){        n=n/10;
     count++;
   }
   cout<<"The number of digits in the given number is equal to:"<<count;
return 0;
}

int main() {
digitcount(); //function calling return
0;
}
```

Q2. WAP to find the factorial of a given number using recursion?

```
//***********************************************************
//This program is developed by Diwakar Kumar [211B114]

//***********************************************************

#include <iostream>

using namespace std;

int factorial(int num)
```

```cpp
{ int fact=1;
if(num!=0){

fact=num*fact
orial(num-1);
   }
        else{
        fact= fact*1;
   return fact;
   }    return
fact;
}

int main()
{ int n=0;
int result;
cout<<"Enter the number whose factorial is to be calculated:";
cin>>n; result=factorial(n);
cout<<"The factorial of "<<n<<" is: "<<result; return
0;
}
```

Q3. WAP to print "Hello JUET!" without main() function?

```cpp
//*************************************************************
//This program is developed by Diwakar kumar(Er. No:211B114)

//*************************************************************

#include <iostream>
# define q3 cout<<"Hello JUET!"  // MACRO DEFINITION

using namespace std;

int question3()  //function declaration and definition
{ if(q3){

        } return
0;
}

int main() //main function declaration
{  question3(); // function calling
```

```
return 0;
}
```

Q4. WAP to print "Hello JUET!" without using any semicolon?

```
//***********************************************************
//This program is developed by Diwakar Kumar [211B114]

//***********************************************************

#include <iostream>

using namespace std;

int main() {    if
(cout<<"Hello JUET!"){

        }

return 0;
}
```

Q5. WAP to round off an integer "i" to the next largest multiple of another integer "j". For example, you will get 259 if i=256 is rounded off to the next largest multiple of j=7.

```
//***********************************************************
//This program is developed by Diwakar Kumar [211B114]

//***********************************************************

#include <iostream>

using namespace std;

int question5()  //function declaration and definition
{ int
a,b,c=0;
cout<<"Enter the numbers A and B:";
cin>>a>>b; for(int i=1;i<=a;i++){
   c=b*i;
if(c>=a){
     cout<<"The multiple is:"<<c;
     break;
```

```
    }
else{ }
} return
0;
}

int main() {
question5();  //function calling return
0;
}
```

Q6. WAP which finds a four-digit number AABB which is a perfect square. A and B represent different digits. For example: 7744 is a four-digit perfect square number which is also satisfying the condition AABB ie. first two digits (AA=77) are same and last two digits (BB=44) are same.

```
//**********************************************************
//This program is developed by Diwakar Kumar [211B114]

//**********************************************************

#include <iostream>
#include <math.h>

using namespace std;

int question6() //function declaration and definition
{ float
numf,sq; int
num,i=0; int
t1,t2=0;
int a[4];
cout<<"Enter the number u want to check\n";
cin>>numf;
sq=sqrt(numf);
num=sq; if(num==sq){
   cout<<"The number entered is a perfect square number.\n";
t1=1; } else{
     cout<<"The number entered is not a perfect square number.\n";
t1=0; }
for(i=0;i<=3;i++){
a[i]=num%10; num=num/10;
} for(i=3;i>=0;i--){
a[3-i]=a[i];
```

```
}
if((a[0]==a[1]) && (a[2]==a[3])){
cout<<"The number entered is symmetric.\n";
t2=1; } else{
    cout<<"The number is asymmetric.\n";
t2=0; }
if(t1==1 && t2==1){
    cout<<"The number is of required type.\n";
} else{
    cout<<"The number is not of required type..";
} return
0;
}

int main(){
question6(); // function calling return
0;
}
```

Q7. Write a function which takes a string as input from user and returns the length of that string without using any string library functions. Call this function from main function.

```
//***********************************************************
//This program is developed by Diwakar Kumar [211B114]

//***********************************************************

#include <iostream> using namespace std; int

question7()  //function declaration and definition

{

    string ar;

    int count=0,i=0;
    cout<<"Please enter the array of characters into this array:";

cin>>ar;    while(ar[i]!='\0'){        count++;

        i++;

    }
```

cout<<"The length of the string is: "<<count;

return 0; } int main(){ //driver main function

question7(); //function calling return 0;

}

Q8. Write a function strcat(s,t) which concatenates the string t to the end of string s. Call this function from mail function.

```
//**********************************************************
//This program is developed by Diwakar Kumar [211B114]

//**********************************************************

#include <iostream> using

namespace std;

 int strcat()  //function declaration and definition

{ string a; string b; cout<<"Please enter the

value of string A:"; cin>>a;

cout<<"Please enter the value of string B:"; cin>>b; cout<<"The

combined and concatenated final string is: "<<a + b; return 0; }

int main(){  //main function  strcat(); //function calling return 0;

}
```

Advanced Practice Problems:

Q1. Given an array A of size N-1 and given that there are numbers from 1 to N with one element missing; Write program to find the missing number.

Test case 1: Given array: 1 2 3 5; missing element is 4.

Test case 2: Given array: 1 2 3 4 5 6 7 8 10; missing element is 9.

```
//**********************************************************
//This program is developed by  Diwakar Kumar [211B114]

//**********************************************************
```

```cpp
#include <iostream> #include <stdlib.h>

using namespace std; int app1() //function

declaration and definition

{    int n=0;    int orig=0;    cout<<"Please enter the no of characters in the array

with the missing element:";    cin>>n;

    int *a=(int *)malloc(n*sizeof(int));    for(int i=0;i<=n;i++){

cout<<"Enter the value for position "<<i<<"in the array:\n";

        cin>>a[i];

    }

    for(int i=0;i<=n;i++){        if(a[i+1]-

a[i]==1){


        }

else{

            cout<<"The missing element is: "<<a[i]+1;

            break;

        }

} return 0; } int main(){

app1(); //function calling

return 0;

}
```

Q2. Write the function strend(s,t), which returns 1 if the string t occurs at the end of the string s, and zero otherwise.

   Sample Test case1: Input:
    s="Object Oriented Programming using C++"

t="Using C++" Output:

1

Sample Test case2:

Input:

s="Object Oriented Programming using C++"

t="Programming" Output:

0

//**

//This program is developed by Diwakar Kumar [211B114]

//**

```cpp
#include <iostream>

#include <string.h> using

namespace std;

int strend(string s,string t)  //function declaration and definition

{ int tr=0; int

index=s.find(t); int

ls=s.length(); if(s.find(t)!=

string::npos){

if(index>(ls/2)){

cout<<"1";

    }

else{

cout<<"0";

} } return 0; } int main()  //driver

main function

{
string s1,s2; cout<<"Please enter

the   string   s:";   getline(cin,s1);
```

```cpp
cout<<"Please enter the string t:";

getline(cin,s2);        strend(s1,s2);

//function calling return 0; }
```