##### OBJECT ORIENTED PROGRAMMING LAB

##### LAB RECORD

###### ***Submitted by***

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**Lab Exercise 1: Revisiting C**

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

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//This program is developed by Tanishq Agarwal (Er. No:211B326)

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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 Tanishq Agarwal (Er. No:211B326)

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#include <iostream>

using namespace std;

int factorial(int num)

{

int fact=1;

if(num!=0){

fact=num\*factorial(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?**

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//This program is developed by Tanishq Agarwal (Er. No:211B326)

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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 Tanishq Agarwal (Er. No:211B326)

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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.**

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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 Tanishq Agarwal (Er. No:211B326)

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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.**

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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 Tanishq Agarwal (Er. No:211B326)

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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 Tanishq Agarwal (Er. No:211B326)

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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**

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#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);

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

getline(cin,s2);

strend(s1,s2); //function calling

return 0;

}