University of engineering & technology Peshawar

COMPUTER PROGRAMMING -LAB

Lab report # 7

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Section: B

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Semester: 2nd

Submitted to:

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Objectives:

- To be familiar with overloading function.
- To be familiar with

Overloading Functions:

The functions having same name but at least one different return type parameter and performing different tasks are called overloading functions.

Example:

Void grade(int)
Void grade(float)
These are overloading functions.

Recursive Functions:

The functions that call themselves and act as loops are called recursive functions. This process is known as recursion. Examples are given below in the tasks:

Task 1:

Source code:

```
#include <iostream>
using namespace std;

int printhundred(int num)
    {
        if(num<=100)
            {
                cout<<num<<"\t";
                num++;
                return printhundred(num);
            }
    }

int main()
    {
        int result= printhundred(1);
        result;

        return 0;
    }
```

Compilation:

```
1       2       3       4       5       6       7       8       9       10      11      12      13      14      15
16      17      18      19      20      21      22      23      24      25      26      27      28      29      30
31      32      33      34      35      36      37      38      39      40      41      42      43      44      45
46      47      48      49      50      51      52      53      54      55      56      57      58      59      60
61      62      63      64      65      66      67      68      69      70      71      72      73      74      75
76      77      78      79      80      81      82      83      84      85      86      87      88      89      90
91      92      93      94      95      96      97      98      99      100
--------------------------------
Process exited after 0.16 seconds with return value 0
Press any key to continue . . .
```

Task 2:

Source code:

```
#include <iostream>
using namespace std;

int sum(int x=9,int y=15)
    {
        return x+y;
    }
int main()
    {
        int num1,num2;

        cout<<"Enter two numbers to add them.\n";
        cin>>num1>>num2;

        int result;
        if(num1==0 || num2==0)
            {
                result= sum();
                cout<<result;
            }
        else
            {
                result= sum(num1,num2);
                cout<<result;
            }
    }
```

Compilation:

```
Enter two numbers to add them.
0
15
24
--------------------------------
Process exited after 5.074 seconds with return value 0
Press any key to continue . . .
```

Task 3:

Source code:

Task 3.cpp

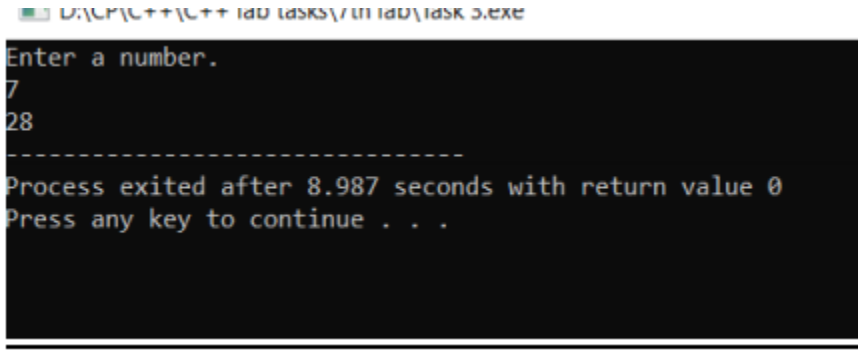
```cpp
#include <iostream>
using namespace std;

int sum(int x)
    {
        if(x!=0)
            {
                return x+sum(x-1);
            }
        else
            {
                return 0;
            }
    }

int main()
    {
        int num;
        cout<<"Enter a number.\n";
        cin>>num;

        int result= sum(num);
        cout<<result;
    }
```

Compilation:



Task 4:

Source code:

```
int sum(int n)
    {
        if(n>0)
            {
                if(n%2!=0)
                {
                    return n + sum(n-2);
                }
                else
                    {
                        return n-1+sum(n-2);
                    }
            }
            else
            {
                return 0;
            }
    }

int main()
    {
        int num;

        cout<<"Enter a number.\n";
        cin>>num;

        int result= sum(num);
        cout<<result;
```

Compilation:

```
Enter a number.
8
16
--------------------------------
Process exited after 3.847 seconds with return value 0
Press any key to continue . . .
```

Task 5:

Source code:

```
#include <iostream>
using namespace std;

float grade(int marks)
    {
        float percentage;
        percentage=(marks*100)/550;
        return percentage;
    }
void grade(float percent)
    {
        if(percent>=90)
            {
                cout<<"You got A grade!!";
            }
        else if(percent>=80 && percent<90)
            {
                cout<<"You got B grade!!";
            }
            else if(percent>=65 && percent<80)
            {
                cout<<"You got C grade!!";
            }
            else if(percent>=40 && percent<65)
            {
                cout<<"You got D grade!!";
            }
```

```
            else
                {
                    cout<<"You got F grade!!";
                }
    }

void grade()
    {
        int mymarks;
        cout<<"Enter your marks out of 550\n";
        cin>>mymarks;

        float percent;
        percent=grade(mymarks);
        grade(percent);
    }

int main()
    {
        grade();
    }
```

Compilation:

```
Enter your marks out of 550
450
You got B grade!!
--------------------------------
Process exited after 3.968 seconds with return value 0
Press any key to continue . . .
```

Task 6:

Source code:

```
#include <iostream>
using namespace std;

float factorial(float x)
    {
        if(x==1 || x==0)
            {
                return 1;
            }
            else
                {
                    return x*factorial(x-1);
                }
    }

int main()
    {
        float num;

        cout<<"Enter a number to find its factorial.\n";
        cin>>num;

        float result= factorial(num);
        cout<<result;
    }
```

Compilation:

```
Enter a number to find its factorial.
7
5040
--------------------------------
Process exited after 3.896 seconds with return value 0
Press any key to continue . . .
```

Task: 7

Source code:

Task 7.cpp

```cpp
#include <iostream>
using namespace std;

int GCD(int num1,int num2)
    {
        if(num2==0)
        return num1;
        return GCD(num2,num1%num2);
    }

int main()
    {
        int _1stnum,_2ndnum;
        cout<<"Enter two values to find its LCM.\n";
        cin>>_1stnum>>_2ndnum;

        int LCM=(_1stnum*_2ndnum)/GCD(_1stnum,_2ndnum);
        cout<<"LCM is= "<<LCM;
    }
```

Compilation:

```
Enter two values to find its LCM.
56
71
LCM is= 3976
--------------------------------
Process exited after 5.121 seconds with return value 0
Press any key to continue . . .
```

Task 8:

Source code:

```
#include <iostream>
using namespace std;

int Fibo_series(int num,int num1,int num2)
    {
        if(num>0)
            {
                cout<<num1<<",";
                return Fibo_series(num-1,num2,num1+num2);
            }
            else
            {
                exit(1);
            }
    }

int main()
    {
        int num;
        cout<<"Enter number of terms u wanna print of fibonacci equence.\n";
        cin>>num;

        cout<<"Fibonacci sequence:\n";
        int result=Fibo_series(num,0,1);
        cout<<result;
    }
```

Compilation:

```
Enter number of terms u wanna print of fibonacci equence.
15
Fibonacci sequence:
0,1,1,2,3,5,8,13,21,34,55,89,144,233,377,
--------------------------------
Process exited after 3.533 seconds with return value 1
Press any key to continue . . .
```

Task no 9:

Source code:

```cpp
#include <iostream>
using namespace std;

int power(int x,int y)
    {
        int result=1;
        if(y==0)
            {
                return result;
            }
        else
        {

            return x*power(x,y-1);
        }
    }

int main()
    {
        int base,pow;

        cout<<"Enter base and power respectively.\n";
        cin>>base>>pow;

        int result=power(base,pow);
        cout<<result;
    }
```

Compilation:

```
Enter base and power respectively.
4
5
1024
--------------------------------
Process exited after 6.967 seconds with return value 0
Press any key to continue . . .
```