Final Lab Exam Solution
Question .No.1

Write a program that takes an input from user and checks to see whether it is a palindrome or not. A palindrome is a string/value that reads the same in both directions e.g. racecar, level, 23432.
Create two functions, one for checking string values and the other for checking integer values for palindrome. Provide the user a menu to choose any one of the following.

```
#include <iostream>
#include <conio>
#include <string>
void strpalindrome()
{
	char str[50];
	cout<<"Enter Word:\t";
	cin>>str;

	int x= strlen(str);
	int z=x/2;
	int flag =0;

	for(int i=0;i<z;i++,x--)
	{
		if(str[i]!=str[x-1])
		{
			flag =1;
			break;
		}
	}

	if(flag ==0)cout<<"Palindrome\n";
	else cout<<"Not a Palindrome\n";
}
////////////////////////////////////////////////////////////////////////////////
void intpalindrome()
{
	unsigned int numb,i;
	int arr[10],j;
	cout<<"Enter Number:\t";
	cin>>numb;
	for(i=numb,j=0;i>0;i/=10,j++)
	 {
	    arr[j]=i%10;
	 }
	int flag =0;

	for(int i=0;i<j;i++,j--)
	{
		if(arr[i]!=arr[j-1])
		{
			flag =1;
```

```
                        break;
                }
        }

        if(flag ==0)cout<<"Palindrome\n";
        else cout<<"Not a Palindrome\n";
}
////////////////////////////////////////////////////////////////////////////////

main()
{
        int pal;
        int ch;
        char ch1;
        do
        {
                cout<<"\nEnter choice:\n\t1.Integer palindrome\n\t2.String palindrome:\n";
                cin>>ch;
                switch(ch)
                {
                        case 1:
                                intpalindrome();
                                break;
                        case 2:
                                strpalindrome();
                                break;
                        default:
                                cout<<"Wrong Input";
                }
                cout<<"\nPress y to continue: \t";
                cin>>ch1;
                }while(ch1=='y'||ch1=='Y');
        //getche();
}
```

Question .No.2

Create a money converter. The user inputs a 7 digit number; break it down to individual tens, hundreds, thousands, and millions. Also, if individual amounts are entered, it should be able to display it in a collective form.

```
#include <iostream>
#include <conio>
#include <string>

void larger()
{
         long val;
           int arr[7];
           cout<<"Enter 7 digit value:\t";
```

```
		cin>>val;

		for(int i=0;i<7;i++)
		{
			arr[i]=val%10;
			 val/=10;
		}
		cout<<"\n\t"<<arr[6]<<"."<<arr[5]<<" Million \n\t"<<arr[4]<<arr[3]<<" Thousand \n\t"<<arr[2]<<" Hundred and "<<arr[1]<<arr[0];
}
////////////////////////////////////////////////////////////////////////////////
void smaller()
{
	int un,tn,hn,tth,th,mi;
	cout<<"Enter Units:\t"; cin>>un;
	cout<<"Enter Tens:\t"; cin>>tn;
	cout<<"Enter Hundreds:\t"; cin>>hn;
	cout<<"Enter Thousands:\t"; cin>>th;
	cout<<"Enter Ten-Thousands:\t"; cin>>tth;
	cout<<"Enter Millions:\t"; cin>>mi;

	cout<<"\n\tValue is:\t"<<mi<<","<<tth<<th<<","<<hn<<tn<<un<<".";
}
void main()
{
	int ch;
	char ch1;

	do
	{
		cout<<"\nEnter choice:\n\t1.Convert from Larger sum to smaller ones.\n\t2.Convert from smaller sums to larger one.\n";
		cin>>ch;
		switch(ch)
		{
			case 1:
				larger();
				break;
			case 2:
				smaller();
				break;
			default:
				cout<<"Wrong Input:";
		}
		cout<<"\n\nEnter y to continue:\t"; cin>>ch1;
	} while(ch1=='y' || ch1=='Y');

}
```

Question .No.3

Write a program that performs basic arithmetic on polynomial expressions. A polynomial expression has the form $ax^2 + bx + c$, where a,b and c are coefficients and x is a variable. Create a structure to hold coefficients of a polynomial expression. The program should be able to:

a. Add two polynomial expressions
b. Subtract two polynomial expressions
c. Solve a polynomial expression for given value of x.

```
#include <iostream>
#include <conio>
struct poly
{
int coffa,coffb,constc;
};

main()
{
        poly p1, p2;
        int a,b,c,x;
        cout<<"Enter values for first polynomial:\n";
        cout<<"\tCoefficient of X^2:\t"; cin>>p1.coffa;
        cout<<"\tCoefficient of X:\t"; cin>>p1.coffb;
        cout<<"\tConstant:\t\t"; cin>>p1.constc;
        cout<<"\nFirst Polynomial\t"<<p1.coffa<<"X^2 + "<<p1.coffb<<"X + "<<p1.constc;

        cout<<"\n\nEnter values for second polynomial:\n";
        cout<<"\tCoefficient of X^2:\t"; cin>>p2.coffa;
        cout<<"\tCoefficient of X:\t"; cin>>p2.coffb;
        cout<<"\tConstant:\t\t"; cin>>p2.constc;
        cout<<"\nSecond Polynomial\t"<<p2.coffa<<"X^2 + "<<p2.coffb<<"X + "<<p2.constc;

        int ch; char ch1;
        do
        {
                cout<<"\nEnter choice: \n\t1.Addition\n\t2.Subtraction\n\t3.Solving for a particular
                value of X\n";
                cin>>ch;
                switch(ch)
                {
                        case 1:
                                a=p1.coffa + p2.coffa;
                                b=p1.coffb + p2.coffb;
                                c=p1.constc + p2.constc;
                                cout<<"\n\t\t"<<a<<"X^2 + "<<b<<"X + "<<c<<endl;

                                break;
```

```
                        case 2:
                                a=p1.coffa - p2.coffa;
                                b=p1.coffb - p2.coffb;
                                c=p1.constc - p2.constc;
                                cout<<"\n\t\t"<<a<<"X^2 + "<<b<<"X + "<<c<<endl;

                                break;
                        case 3:
                                cout<<"\nEnter value for X:"; cin>>x;
                                a=p1.coffa *  x*x;
                                b=p1.coffb * x;
                                c=p1.constc;
                                cout<<"\nResult for first polynomial is:\t"<<a+b+c;

                                a=p2.coffa *  x*x;
                                b=p2.coffb * x;
                                c=p2.constc;
                                cout<<"\nResult for second polynomial is:\t"<<a+b+c;

                                break;
                        default:
                                cout<<"\nWrong input:";
                }
                cout<<"\nContinue? y/n:";
                cin>>ch1;
        }while(ch1=='y' || ch1 =='Y');
        getche();
}
```
