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SEC:(T)

ASSIGNMENT 4

Q1. Write a structure declaration to hold the following data about a savings account:

Account Number (15-element character string)

Account Balance (double)

Interest Rate (double)

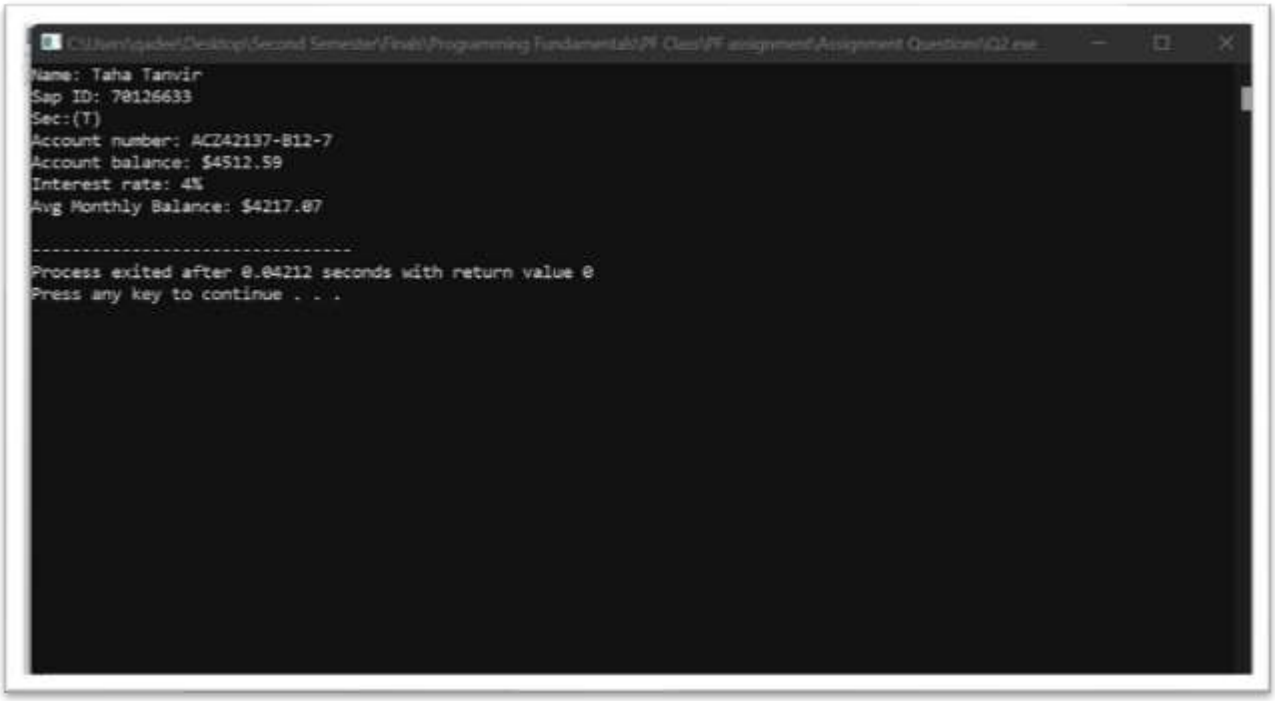
Average Monthly Balance (double)

CODE:

```
#include<iostream>

using namespace std;

struct account

{

        string AccNo;

        double AccBalance;

        double InterestRate;

        double MonthlyBalance;

};

int main()

{

        account info;
```

```
        cout<<"Name: Taha Tanvir \nSap ID: 70126633 \nSec:(T)\n";
        info.AccNo="ACZ42137-B12-7";
        info.AccBalance=4512.59;
        info.InterestRate=4;
        info.MonthlyBalance=4217.07;

        cout<<"Account number: "<<info.AccNo<<endl;
        cout<<"Account balance: "<<'$'<<info.AccBalance<<endl;
        cout<<"Interest rate: "<<info.InterestRate<<'%'<<endl;
        cout<<"Avg Monthly Balance: "<<'$'<<info.MonthlyBalance<<endl;
}
```

OUTPUT:



Q2. Write a definition statement for a variable of the structure you declared in **question 1**- Initialize the members with the following data:

Account Number: ACZ42137-B12-7

Account Balance: $4512.59

Interest Rate: 4%

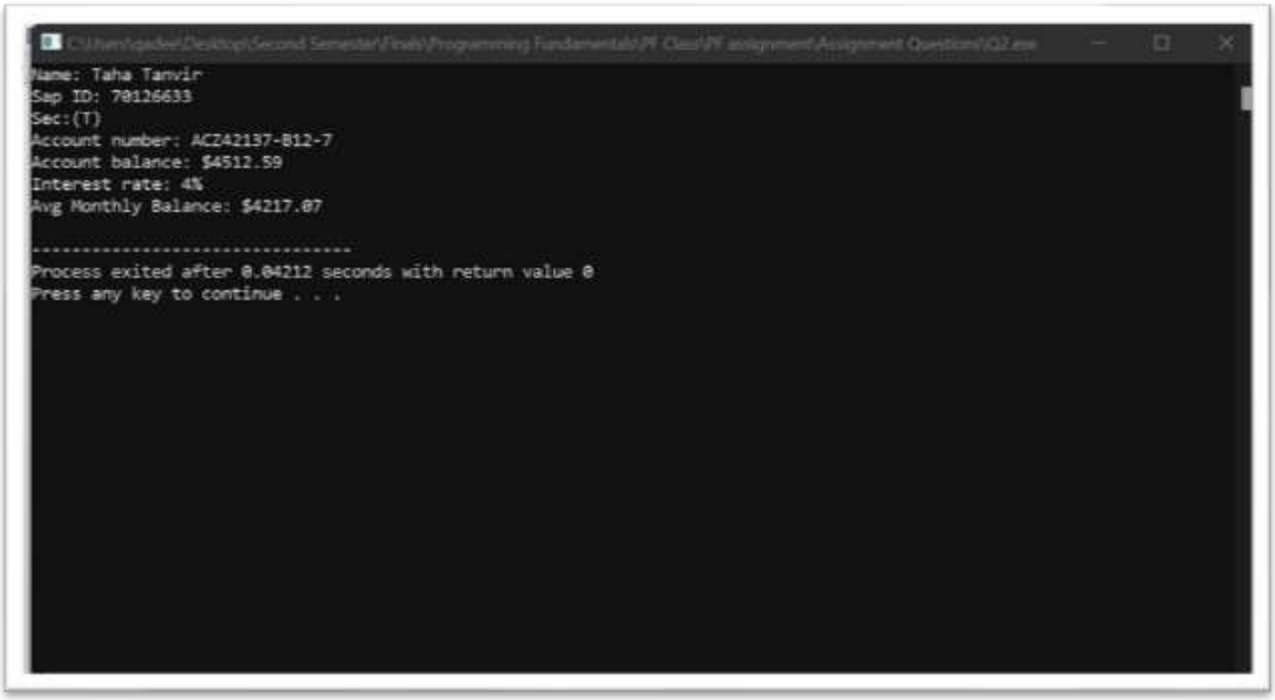
Average Monthly Balance: $4217.07

CODE:

```
#include<iostream>
using namespace std;
struct account
{
	string AccNo;
	double AccBalance;
	double InterestRate;
	double MonthlyBalance;
};
int main()
{
	account info;
	cout<<"Name: Taha Tanvir \nSap ID: 70126633 \nSec:(T)\n";
	info.AccNo="ACZ42137-B12-7";
	info.AccBalance=4512.59;
	info.InterestRate=4;
```

```
        info.MonthlyBalance=4217.07;


        cout<<"Account number: "<<info.AccNo<<endl;
        cout<<"Account balance: "<<'$'<<info.AccBalance<<endl;
        cout<<"Interest rate: "<<info.InterestRate<<'%'<<endl;
        cout<<"Avg Monthly Balance: "<<'$'<<info.MonthlyBalance<<endl;
}
```

OUTPUT:



Q3. The following program skeleton, when complete, asks the user to enter these data about his or her favorite movie:

Name of movie

Name of the movie's director

Name of the movie's producer

The year the movie was released

Complete the program by declaring the structure that holds this data, defining a structure variable, and writing the individual statements necessary.

```
#include <iostream>

using namespace std;

// Write the structure declaration here to hold the movie data.

int main()

{

// define the structure variable here.

cout << "Enter the following data about your\n";

cout << "favorite movie.\n";

cout << "name: ";

// Write a statement here that lets the user enter the

// name of a favorite movie. Store the name in the

// structure variable.

cout << "Director: ";

// Write a statement here that lets the user enter the
```

// name of the movie's director. Store the name in the

// structure variable.

cout << "Producer: ";

// Write a statement here that lets the user enter the

// name of the movie's producer. Store the name in the

// structure variable.

cout << "Year of release: ";

// Write a statement here that lets the user enter the

// year the movie was released. Store the year in the

// structure variable.

cout << "Here is data on your favorite movie:\n";

// Write statements here that display the data.

// just entered into the structure variable.

return 0;

}

CODE:

```
#include <iostream>

using namespace std;

struct movie

{

        string movie;

        string producer;

        string director;

        int year;

};
```

```
int main()
{
	movie data;
	cout<<"Name: Taha Tanvir \nSap ID: 70126633 \nSec:(T) \n\n";
	cout<<"Enter information about your favourite movie: \n";
	cout<<"Name: ";
	cin>>data.movie;
	cout<<"Producer: ";
	cin>>data.producer;
	cout<<"Director: ";
	cin>>data.director;
	cout<<"Year: ";
	cin>>data.year;
	cout << "Here is data on your favorite movie:\n";
	cout<<"Name: "<<data.movie<<endl;
	cout<<"Producer: "<<data.producer<<endl;
	cout<<"Director: "<<data.director<<endl;
	cout<<"Year: "<<data.year<<endl;
	return 0;
}
```

OUTPUT:

For questions 4–7 below, assume the Product structure is declared as follows:

struct Product

{

char description[50]; // Product description

int partNum; // Part number

double cost; // Product cost

};

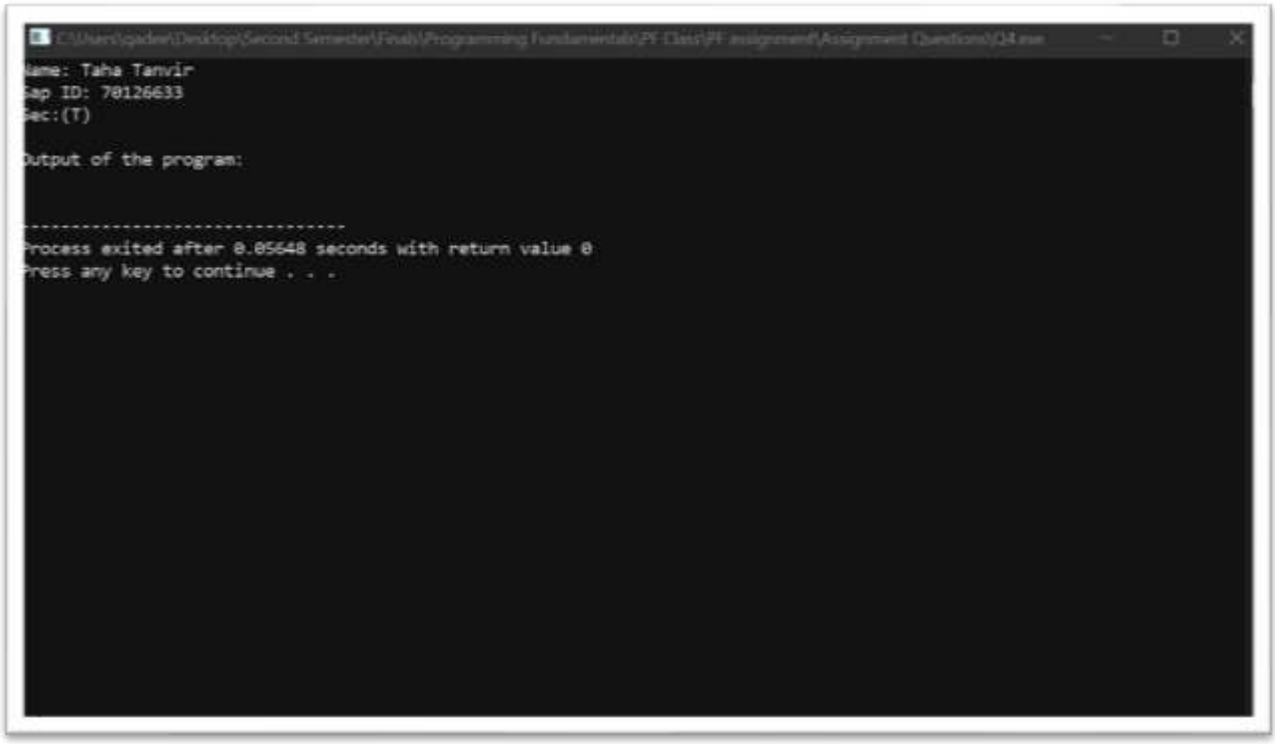
Q4. Write a definition for an array of 100 Product structures. Do not initialize the array.

CODE:

```
#include<iostream>

using namespace std;

struct Product

{

char description[50]; // Product description

int partNum; // Part number

double cost; // Product cost

};

int main()
```

```
{
        cout<<"Name: Taha Tanvir \nSap ID: 70126633 \nSec:(T) \n\n";
        cout<<"Output of the program:\n\n";
        Product data[100];
}
```

OUTPUT:



Q5. Write a loop that will step through the entire array you defined in **Question 4**, setting all the product descriptions to a null string, all part numbers to zero, and all costs to zero.

CODE:

```
#include<iostream>

using namespace std;

struct Product
```

```
{
char description[50]; // Product description
int partNum; // Part number
double cost; // Product cost
};
int main()
{
	cout<<"Name: Taha Tanvir \nSap ID: 70126633 \nSec:(T) \n\n";
	cout<<"Output of the program:\n\n";
	Product data[100];
	for(int x=0;x<100;x++)
	{
		strcpy(data[x].description, "\0");
	}
	for(int y=0;y<100;y++)
	{
		data[y].partNum=0;
		data[y].cost=0;
	}
}
```

Q6. Write the statements that will store the following data in the first element of the array you defined in **Question 4**:

Description: Claw hammer

Part Number: 547

Part Cost: $8.29

CODE:

```
#include<iostream>

using namespace std;

struct Product

{

char description[50]; // Product description

int partNum; // Part number

double cost; // Product cost

};

int main()

{

	cout<<"Name: Taha Tanvir \nSap ID: 70126633 \nSec:(T) \n\n";

	cout<<"Output of the program:\n\n";

	Product data[100];

	for(int x=0;x<100;x++)

	{

		strcpy(data[x].description, "\0");

	}

	for(int y=0;y<100;y++)

	{

		data[y].partNum=0;

		data[y].cost=0;

	}

	//cout all members of structure

	strcpy (data[0].description, "Claw Hammer");

	data[0].partNum = 547;

	data[0].cost = 8.29;
```

```
}
```

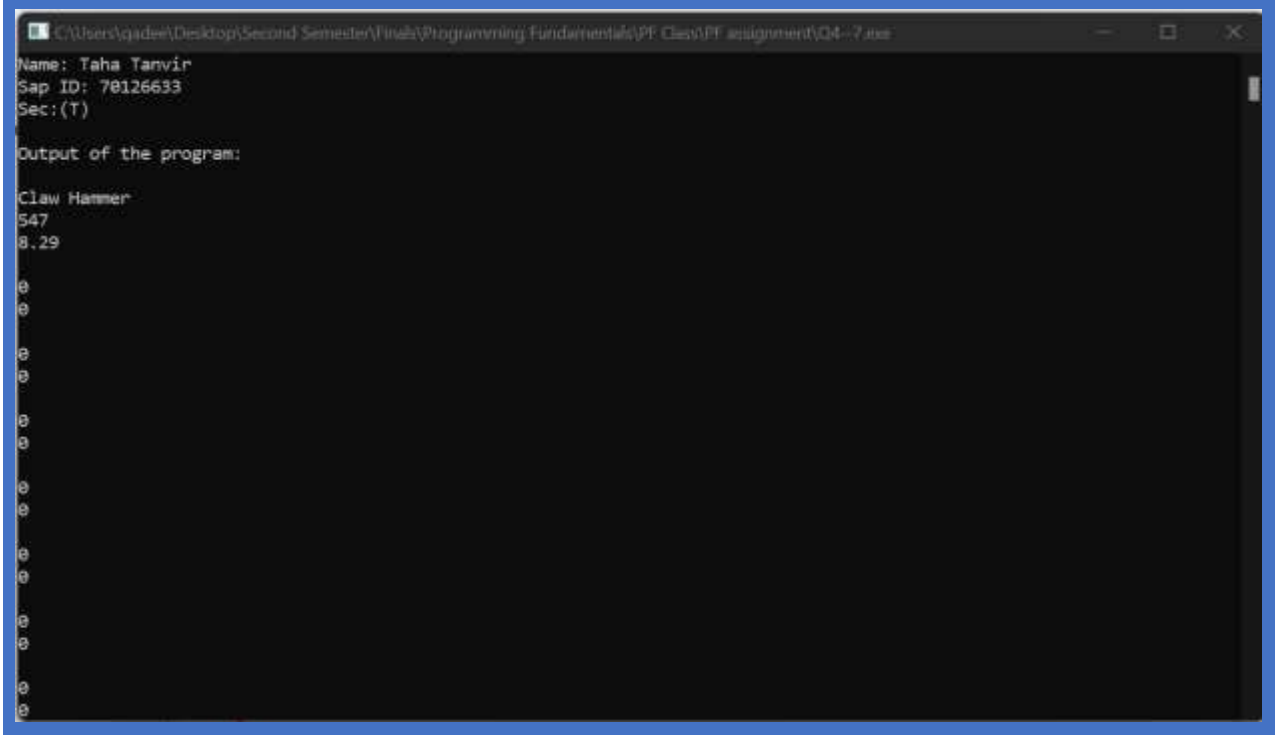
Q7. Write a loop that will display the contents of the entire array you created in **Question 4**.

CODE:

```
#include<iostream>
using namespace std;
struct Product
{
char description[50]; // Product description
int partNum; // Part number
double cost; // Product cost
};
int main()
{
	cout<<"Name: Taha Tanvir \nSap ID: 70126633 \nSec:(T) \n\n";
	cout<<"Output of the program:\n\n";
	Product data[100];
	for(int x=0;x<100;x++)
	{
		strcpy(data[x].description, "\0");
	}
	for(int y=0;y<100;y++)
	{
```

```
            data[y].partNum=0;
            data[y].cost=0;
        }
        //cout all members of structure
        strcpy (data[0].description, "Claw Hammer");
        data[0].partNum = 547;
        data[0].cost = 8.29;
        for(int x=0;x<100;x++)
        {
            cout<<data[x].description<<endl;
            cout<<data[x].partNum<<endl;
            cout<<data[x].cost<<endl;
        }
}
```

OUTPUT:



Q8. Write a structure declaration named Measurement, with the following members:

miles, an integer

meters, a long integer

CODE:

```
#include<iostream>

using namespace std;


struct Measurement

{

	int miles;

	long meters;

};
```

Q9. Write a structure declaration named Destination, with the following members:

city, a 35-element character array

distance, a Measurement structure (declared in **Question 8**)

Also define a variable of this structure type.

CODE:

```
#include<iostream>

using namespace std;


struct Measurement

{

	int miles;

	long meters;

};


struct Destination

{

	char city[35];
```

```
        Measurement distance;
};
```

Q10. Write statements that store the following data in the variable you defined in **Question 9**:

City: Tupelo

Miles: 375

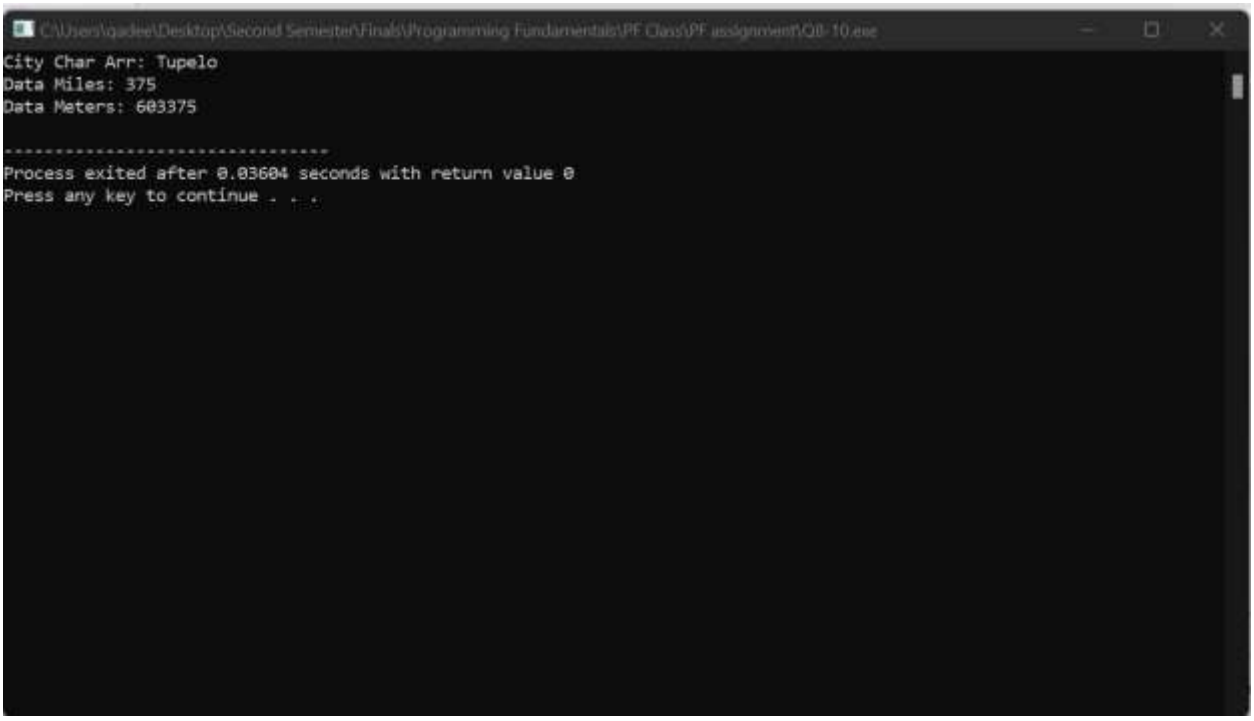
Meters: 603,375

CODE:

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

struct Measurement
{
        int miles;
        long meters;
};

struct Destination
{
        char city[35];
        Measurement distance;
};

int main()
```

```
{
        Measurement data;
        Destination info;

        string var = "Tupelo";
        info.city[0] = 'T';
        info.city[1] = 'u';
        info.city[2] = 'p';
        info.city[3] = 'e';
        info.city[4] = 'l';
        info.city[5] = 'o';

        data.miles = 375;
        data.meters = 603375;

        cout<<"City Char Arr: ";

        for(int i = 0; i < 6; i++){
                cout<<info.city[i];
        }
        cout<<endl;

        cout<<"Data Miles: "<<data.miles<<endl;
        cout<<"Data Meters: "<<data.meters<<endl;

}
```

OUTPUT:



Assume the following structure declaration exists for questions 11–15:

```
struct Rectangle
{
int length;
int width;
};
```

Q11. Write a function that accepts a Rectangle structure as its argument and displays the structure's contents on the screen.

CODE:

```
#include<iostream>

using namespace std;
```

```
struct Rectangle
{
	int length;
	int width;
};

void rectangleInfo(Rectangle data)
{

	data.length = 6;
	data.width = 3;
	cout<<"Length: "<<data.length<<endl;
	cout<<"Width: "<<data.width<<endl;
}

int main()
{
	Rectangle Data;
	rectangleInfo(Data);
}
```

OUTPUT:

Q12. Write a function that uses a Rectangle structure reference variable as its parameter and stores the user's input in the structure's members.

CODE:

```
#include<iostream>

using namespace std;


struct Rectangle

{

	int length;

	int width;

};


void rectangleInfo(Rectangle &data)

{

	cout<<"Length: "<<data.length<<endl;

	cout<<"Width: "<<data.width<<endl;

}


int main()

{

	Rectangle Data;
```

```
        cout<<"Details of rectangle:"<<endl;


        cout<<"Enter length: ";
        cin>>Data.length;


        cout<<"Enter width: ";
        cin>>Data.width;


        cout<<"Members of Rectangle:"<<endl;
        rectangleInfo(Data);
}
```

OUTPUT:

Q13. Write a function that returns a Rectangle structure. The function should store the user's input in the members of the structure before returning it.

CODE:

```
#include<iostream>

using namespace std;
```

```
struct Rectangle
{
	int length;
	int width;
};

void rectangleInfo(int len, int wid)
{
	Rectangle data;
	data.length = len;
	data.width = wid;
	cout<<"Length: "<<data.length<<endl;
	cout<<"Width: "<<data.width;
}
int main()
{
	Rectangle Data;
	int length = 0, width = 0;
	cout<<"Details of rectangle:"<<endl;
	cout<<"Enter length: ";
	cin>>length;
	cout<<"Enter width: ";
	cin>>width;
	cout<<"Members of rectangle: "<<endl;
	rectangleInfo(length, width);
}
```

OUTPUT:


C:\Users\qadee\Desktop\Second Semester\Finals\Programming Fundamentals\PF Class\PF assignment\Q13.exe
Details of rectangle:
Enter length: 2
Enter width: 6
Members of rectangle:
Length: 2
Width: 6

Process exited after 3.216 seconds with return value 0
Press any key to continue . . .