Assignment programming paradigms

Exercise 1:

Consider the following program in C:

```
1.  #include <iostream>
2.  using namespace std;
3.  int x=0;
4.  void p(int y, int z){
5.        x = x+1;
6.        y = y+1;
7.        z= z+1;
8.        cout<<x+y+z<<endl;
9.  }


10. int main(){
11.       int x = 1;
12.       p(x,x);
13. }
```

Question:

1. What is the value printed? (Remember that C has static scope.)

Exercise 2

Given the following programs code:

```
int m = 50; //global
int n= 100; //global
void f( ) {  cout <<  n; }
void g(int n) {
        cout <<  m;
        cout <<  n;
        f( ) ;
}
main() {
   g(1);
}
```

2.1 What will be the **output** in the case of **static** scoping? **Justify your response** by drawing graphic structure of the program.

……

2.2 What will be the **output** in the case of **dynamic scoping**? **Justify your response** by drawing graphic structure of the program.

……

2.3 C++ is a Static or Dynamic scope language?

……

Exercise 3:

Given the following programs code:

```
int x = 0; //global
int y= 1; //global
void f(int x) {
        int y = 42;
        int x = 1;
        g(x);
}
void g(int x) {
        int z= 2;
        cout << x;
        cout << y;
        cout << z;
}
main() {
   f(x);
}
```

3.1 What will be the **output** in the case of **static** scoping? **Justify your response** by drawing graphic structure of the program.

……

3.2 What will be the **output** in the case of **dynamic scoping**? **Justify your response** by drawing graphic structure of the program.

……

Question 4

Assume the following rules of associativity and precedence for expressions:

Precedence	*Highest*	
		+, –, &, **mod**
		*, /, **not**
		– (unary)
		=, /=, < , <=, >=, >
		and
	Lowest	**or**, **xor**
Associativity	*right to left*	

Suppose a = 3, b=4, c=2

Show the order of evaluation of the following expressions and give the result for each expression

a. a * b - 1 + c
b. a * (b - 1) / c **mod** d
c. (a - b) / c & (d * e / a - 3)
d. -a **or** c = d **and** e
e. a > b **and** c **or** d <= 17
f. -a + b

Question 5

Consider the following record type:

```
Struct Person
{       Char lname[10];
        Char fname[15];
        Int phoneNumber;
        Struct address ad;
        Struct Birthdate bth;
}
```

Struct address

{ Char streetname[20];

Char townname[20];

Char country [15];

Int houseNumber;

}

Struct Birthdate

{ Int day;

Int month;

Int year;}

Mr Ali Mohamed was born on 12/12/1980. He lives at chobra street, house number 5 in kSA, his phone number is 05000000.

Write the set of instructions allowing to assign this information using a variable of type Person called p.

Struct person p;
……