

Question 1:**Source code:**

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
```

```
struct Box{

    char name[80];
    int length;
    int width;
    int height;
    int area;
    int perimeter;
```

```
};
```

```
void computeBox(struct Box* in);
```

```
void printBox( struct Box in);
```

```
int main(){

    struct Box R1 = {"Rec1", 10, 3, 4, 0, 0 };
    struct Box R2 = {"Rec2", 15, 2, 5, 0, 0 };
    computeBox(&R1);
    computeBox(&R2);
    printBox(R1);
    printBox(R2);
```

```
}
```

```
void computeBox(struct Box* in){
```

```
    in->area = 2 * ( (in->length *in->width) + (in->length * in->height) + (in->width*
in->height));
```

```
    in->perimeter = 2*( in->length + in->width + in->height);
```

```
}
```

```
void printBox(struct Box in ){
```

```
        printf( "Box name: %s\nLength: %d\nWidth: %d \nHeight: %d \nArea: %d \nPerimeter:
%d\n", in.name, in.length, in.width, in.height, in.area, in.width);

}
```

Console print out:

```
$ ./Q1
Box name: Rec1
Length: 10
Width: 3
Height: 4
Area: 164
Perimeter: 3
Box name: Rec2
Length: 15
Width: 2
Height: 5
Area: 230
Perimeter: 2
```

Question 2:

Source code:

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <stdbool.h>
```

```
bool isValid(char code[]);
```

```
int main(){
```

```
    char serialcode1[] = "89238498723498KL";
    char serialcode2[] = "97083498SL";
```

```
    if( isValid (serialcode1) )
        printf("serialcode 1 is valid code\n");
    else
        printf("serialcode 1 is invalid code\n");
```

```

        if( isValid (serialcode2) )
            printf("serialcode 2 is valid code\n");
        else
            printf("serialcode 2 is invalid code\n");

    }

bool isValid(char code[]){

    int length = strlen(code);

    if(length < 8 || length > 10 )
        return false;

    char front [4];
    strncpy(front, code , 3);
    front[3] = '\0';
    char last[] = {code[length-2], code[length-1], '\0'};

    if( strcmp(front, "970") != 0 )
        return false;

    if(strcmp( last , "SL") != 0 )
        return false;

    return true;

}

```

Print out:

\$./q2

serialcode 1 is invalid code

serialcode 2 is valid code