Lesson 13 Lab

Task 1: To define a structure called student includes:

- a char array named firstname (length 20 chars)
- a char array named lastname (length 20 chars)
- an integer named age

Paste your code in the box below

```
struct student
{
    char firstname[20];
    char lastname[20];
    int age;
};
```

Task 2: With the definition in Task 1, to declare two variables (s1, s2) of the structure, and then to assign listed values:

- s1: Rupert Grint (age 33)
- s2: Emma Watson (age 31)

Paste your code in the box below

```
struct student
{
    char firstname[20];
    char lastname[20];
    int age;
};

struct student s1 = {"Rupert", "Grint", 33};
struct student s2 = {"Emma", "Watson", 31};
```

Task 3: Assume we have definition as:

```
struct student {
    char firstname[20];
    char lastname[20];
    int age;
};

struct student s1, s2;
struct student *s2Ptr = &s2;
```

- To assign listed values using s1 and s2Ptr
- [Hint: using assignment (=) and function strcpy]
    - s1: Rupert Grint (age 33)
    - s2: Emma Watson (age 31)

Paste your code in the box below

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

struct student
{
    char firstname[20];
    char lastname[20];
    int age;
};

int main()
{
    struct student s1, s2;
    struct student *s2ptr = &s2;

    s1.age = 33;
    strcpy(s1.firstname, "Rupert");
    strcpy(s1.lastname, "Grint");

    s2ptr->age = 31;
    strcpy(s2ptr->firstname, "Emma");
    strcpy((*s2ptr).lastname, "Watson");

    return 0;
}
```

Task 4: To define a structure with one integer, one char array of length 3 and one double, make a guess of its length, and then to print its length (using sizeof) to see if your guess is correct.
[Hint: Usually, an int takes 4 bytes, a char array of length 3 takes 3 bytes, and a double takes 8 bytes]
Paste your code in the box below

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

struct abc
{
    int a;
    char b[3];
    double c;
};

int main()
{
    struct abc xyz;
    printf("%d", sizeof(xyz));
    return 0;
}
```

Your guess of the length of the structure is

```
4 + 3 + 8 = 15 round up to multiple of 4 = 16
```

The output of the length of the structure is

```
16
```

Task 5: To define a structure of your choice including a pointer to itself, and then to define a name for it (using typedef)

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

typedef struct abc xyz;
typedef struct abc
{
```

```
    int a;
    char b[3];
    double c;
    struct abc *ptr;
};

int main()
{
    xyz newAbc;
    newAbc.a = 10;
    printf("%d", newAbc.a);
    return 0;
}
```