# 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[10];  char lastname[10];  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[10];  char lastname[10];  int age;  };  struct student s1 = {"Rupert", "Grint", 33};  struct student s2 = {"Emma", "Watson", 31}; |

Task 3: Assume we have definition as:

Text

Description automatically generated



* 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;  } |