C - TYPEDEF

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- **Typedef** is a keyword that is used to give a new symbolic name for the existing name in a C program.
- This is same like defining alias for the commands. Consider the below structure.
```
struct student
{
        int mark [2];
        char name [10];
        float average;
}
```

- Variable for the above structure can be declared in two ways.
- 1st way :
  - struct student record;   /* for normal variable */
    struct student *record;   /* for pointer variable */
- 2nd way :
  - typedef struct student status;
- When we use "typedef" keyword before struct <tag_name> like above, after that we can simply use type definition "status" in the C program to declare structure variable.
- Now, structure variable declaration will be, "status record".
- This is equal to "struct student record". Type definition for "struct student" is status. i.e. status = "struct student"

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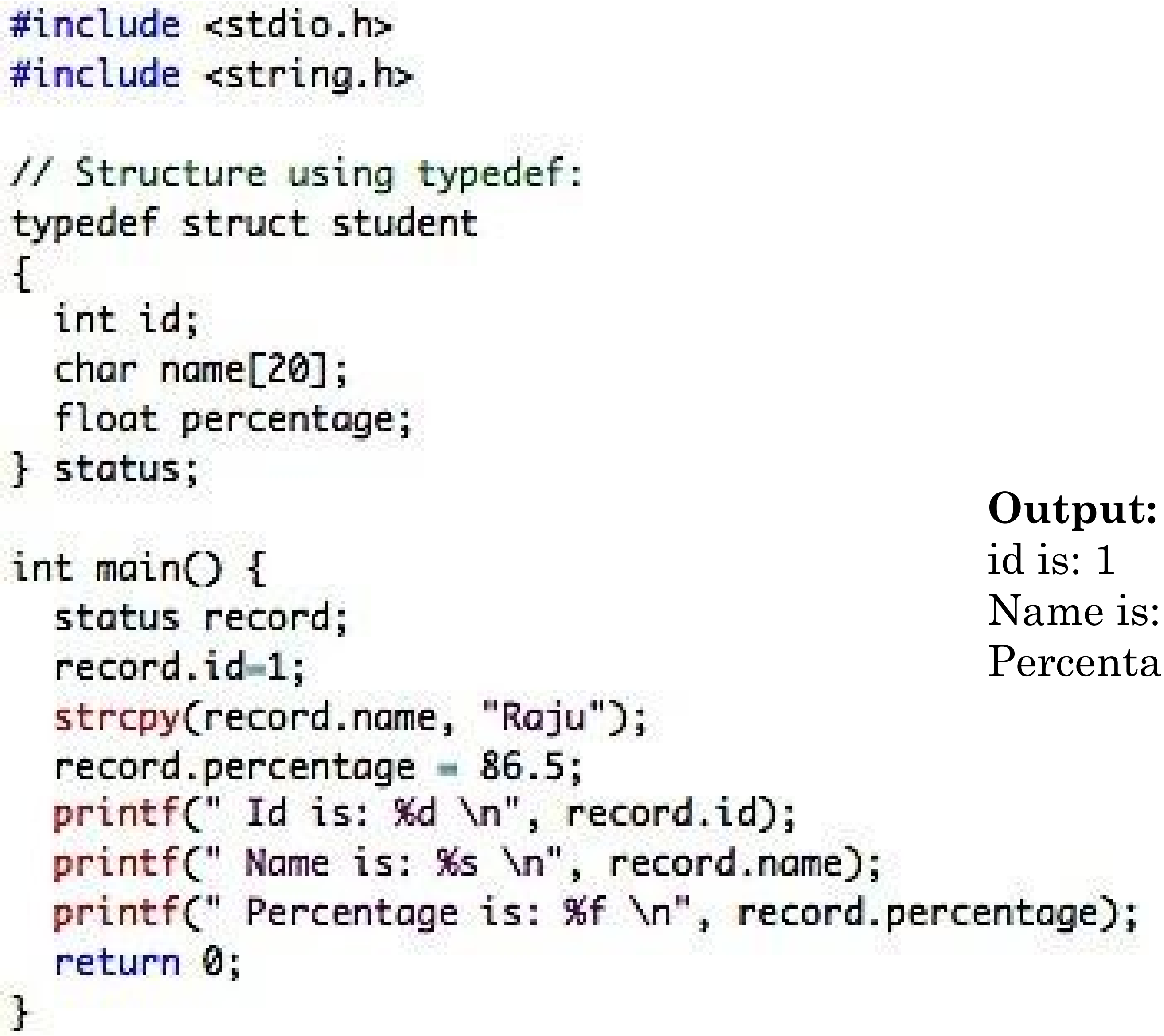
- **An alternative way for structure declaration using typedef in C:**

  ```
  typedef struct student
  {
          int mark [2];
          char name [10];
          float average;
  } status;
  ```

- To declare structure variable, we can use the below statements.

  ```
  status record1;          /* record 1 is structure variable */
  status record2;          /* record 2 is structure variable */
  ```

EXAMPLE PROGRAM FOR C TYPEDEF



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

// Structure using typedef:
typedef struct student
{
  int id;
  char name[20];
  float percentage;
} status;

int main() {
  status record;
  record.id=1;
  strcpy(record.name, "Raju");
  record.percentage = 86.5;
  printf(" Id is: %d \n", record.id);
  printf(" Name is: %s \n", record.name);
  printf(" Percentage is: %f \n", record.percentage);
  return 0;
}
```

Output:

```
id is: 1
Name is: Raju
Percentage is: 86.500000
```

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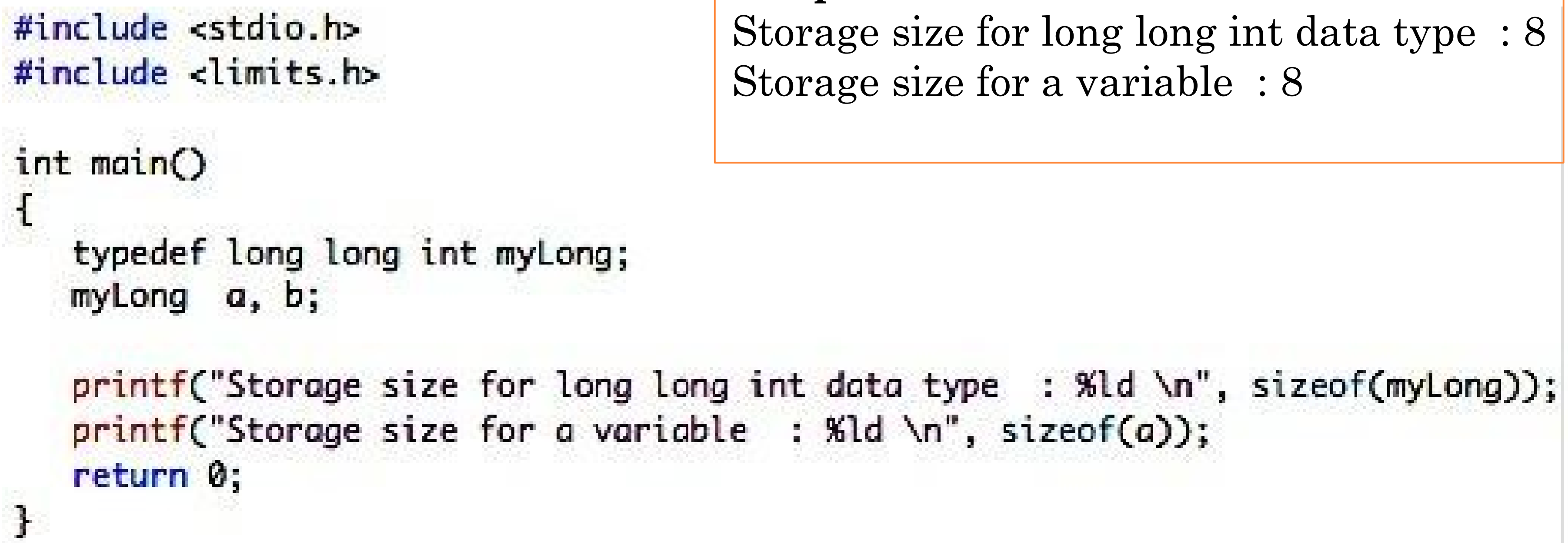
- Typedef can be used to simplify the real commands as per our need.
- For example, consider below statement.
- typedef long long int myLong;
- In above statement, myLong is the type definition for the real C command “long long int”.
- We can use type definition myLong instead of using full command “long long int” in a C program once it is defined.



```c
#include <stdio.h>
#include <limits.h>

int main()
{
   typedef long long int myLong;
   myLong  a, b;

   printf("Storage size for long long int data type  : %ld \n", sizeof(myLong));
   printf("Storage size for a variable  : %ld \n", sizeof(a));
   return 0;
}
```

Output:

```
Storage size for long long int data type  : 8
Storage size for a variable  : 8
```