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Introduction to typedef in C

typedef is a predefined keyword in the C language. This typedef keyword tells the C co that “please assign a user given keyword to the already existing type”. It Means typedef gives an alternative user-friendly keyword for existing C language data types like unsigned int, long,

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of that, we can assign a new name to the already existing data type, then it is easy to use in the code. For this, we can use the typedef keyword.

How does typedef Work in C Language?

This keyword works with typedef followed by existing data type, and the user wanted a name to the data type. Then the compiler will assume the existing keyword name becomes user givenname for the entire application.

Syntax:

```
typedef<existing data type or keyword in C><user required name for the data type or keyword>;
```

Examples of typedef in C

Below given are the practical examples of typedef:

Example #1 – Typdef unsigned int ui;

Code: StructTypedef.c


```
#include <stdio.h>//Add all the basic C language libraries
#include <string.h>//Add the String library to perform string actions
```

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```
float CourseFee;//declare float variable
char companyName[100];//declare character variable
int loginID;//declare integer variable
} Courses; //To make work user defined keyword we have call the keyword from here
//main method to execute application code
int main( ) {
//Taken Courses name as course( alias name)
Courses course;
//Copying character values into varaible
strcpy(course.courseName, "C Programming");
strcpy(course.companyName, "EDUCBA");
//Initailize float values into varaible
course.CourseFee = 5000.00;
//Initailize integer values into varaible
course.loginID=2452;
//display the output of all the declared variable below
printf( "Course Name : %s\n", course.courseName);
printf( "Company Name : %s\n", course.companyName);
printf( "Course Fee : %f\n", course.CourseFee);



printf( "Login ID : %d\n", course.loginID);
return 0;
}
```

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```
Login ID : 2452
```

Example #2 – Typedef union keyword

Code: TypedefUnion.c

```
#include <stdio.h>//Add all the basic C language libraries
#include <string.h>//Add the String library to perform string actions
//typedef for give struct keyword to user wanted keyword as like below (Employee)
typedef union Employee
{
inteID;//declare integer variable
float salary;//declare float variable
char company[30];//declare character variable
}Employee;//To make work user defined keyword we have call the keyword from here
//main method to execute application code
int main()
{
//Taken Courses name as course( alias name)

Employee e1, e2, e3, e4;
//Initailize float values into varaible
e1.salary = 183149121113437770916823040.000000 ;
```

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```
//displaying employee details
printf("Details of First Employee\n");
printf("Employee ID : %d\n", e1.eID);
printf("Employee Salary : %f\n", e1.salary);
printf("Company Name : %s\n", e1.company);
//Initailize integer values into varaible
e2.eID = 1667330639 ;
//Initailize float values into varaible
e2.salary = 4158754218828133040128.000000;
//Copying character values into varaible
strcpy(e2.company,"Oracle Technologies Private Limited");
//displaying employee details
printf("Details of Second Employee\n");
printf("Employee ID : %d\n", e2.eID);
printf("Employee Salary : %f\n", e2.salary);
printf("Company Name : %s\n", e2.company);
//Initailize integer values into varaible
e3.eID = 1919117645;
//Initailize float values into varaible
e3.salary = 450434547601433904809925777817 6.000000;
//Copying character values into varaible
strcpy(e3.company,"Microsoft Technologies Private Limited");
//displaying employee details

printf("Details of Third Employee\n");
printf("Employee ID : %d\n", e3.eID);
printf("Employee Salary : %f\n", e3.salary);
```

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```
e4.salary = 1130982940872050591801760.000000;
//Copying character values into varaible
strcpy(e4.company,"Google Technologies Private Limited");
//displaying employee details
printf("Details of Fourth Employee\n");
printf("Employee ID : %d\n", e4.eID);
printf("Employee Salary : %f\n", e4.salary);
printf("Company Name : %s\n", e4.company);
return 0;
}
course.loginID=2452;
//display the output of all the declared variable below
printf( "Course Name : %s\n", course.courseName);
printf( "Company Name : %s\n", course.companyName);
printf( "Course Fee : %f\n", course.CourseFee);
printf( "Login ID : %d\n", course.loginID);
return 0;
}
```

Output:

```
Details of First Employee
Employee ID : 1769104726
Employee Salary : 1831491211134377709168230 4.000000
Company Name : Verinon Technologies Private Limited
Details of Second Employee
```

```
Details of Fourth Employee
Employee ID : 1735356231
Employee Salary : 113069829408720365918617 6.000000
Company Name : Google Technologies Private Limited
```

Example #3 – Typedef unsigned char

Code: TypedefUnsignedChar.c

```
#include <stdio.h>//Add all the basic C language libraries
int main()
{
//typedef for give struct keyword to user wanted keyword as like
below
typedef unsigned char uchar;
//declare character variable with user defined keyword
uchar alphabet = 'a';
//declare character variable with user defined keyword
uchar a='P';
//declare character variable with user defined keyword
uchar b='b';
//declare character variable with user defined keyword
uchar c = 'C';
//declare character variable with user defined keyword

uchar d='d';
//declare character variable with user defined keyword
uchar e = 'E';
```

```
//Displaying output of the user
printf("alphabet inside main() : %c\n", alphabet);
printf("alphabet inside main() : %c\n", a);
printf("alphabet inside main() : %c\n", b);
printf("alphabet inside main() : %c\n", c);
printf("alphabet inside main() : %c\n", d);
printf("alphabet inside main() : %c\n", e);
printf("alphabet inside main() : %c\n", f);
printf("alphabet inside main() : %c\n", g);
return 0;
}
```

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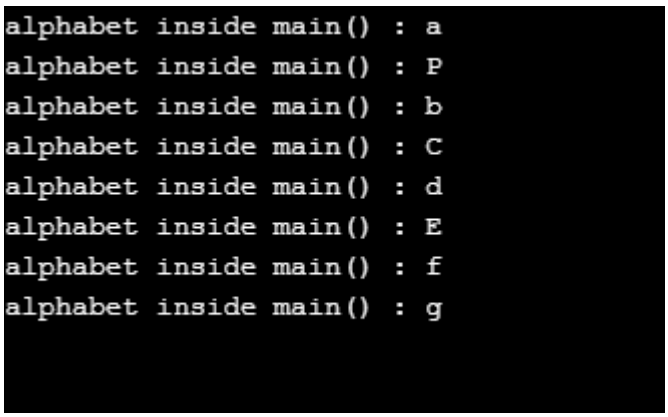
Output:



Conclusion

Typedef is used to declare predefined C data types or keywordswith user-defined names. It reduces the repetition same data type again and again. We can conclude by this we can change any c data type name with any user wanted name.

Recommended Articles

This is a guide to typedef in C. Here we also discuss the Introduction and how does typedef works, along with examples and its code implementation. You may also have a look at the following articles to learn more –

1. Constants in C (https://www.educba.com/constants-in-c/)
2. Bubble Sort in C# (https://www.educba.com/bubble-sort-in-c-sharp/)
3. Queue in C (https://www.educba.com/queue-in-c/)
4. Null pointer in C (https://www.educba.com/null-pointer-in-c/)

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Apps

iPhone & iPad (https://itunes.apple.com/in/app/educba-learning-app/id1341654580?mt=8)

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Resources

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