TYPE CONVERSION and TYPE CASTING

UNIT-1

TYPE CONVERSION

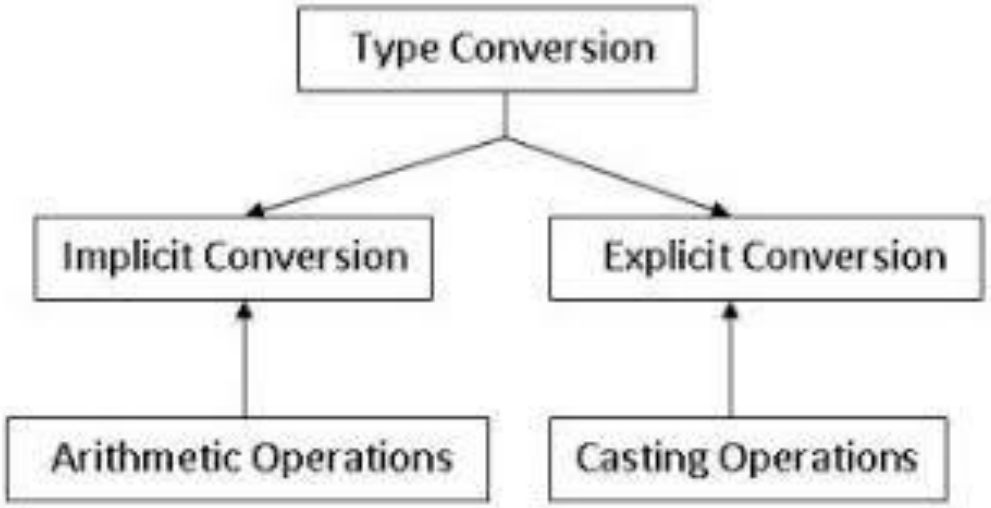
In computer science, type conversion, type casting, type coercion,and type juggling are different ways of changing an expression from one data type to another.

Type conversions can take advantage of certain features of type hierarchies or data representations.

Type conversion in c can be classified into the following two types

Implicit type conversion or Type Promotion

Explicit type conversion or Type Casting



Implicit Type conversion or type promotion

Implicit type conversion means conversion of data types without losing its original meaning.

This type of typecasting is essential when you want to change data types without changing the significance of the values stored inside the variable.

Implicit type conversion happens automatically when a value is copied to its compatible data type. During conversion, strict rules for type conversion are applied. If the operands are of two different data types, then an operand having lower data type is automatically converted into a higher data type.

Example:

```
#include<stdio.h>
int main(){
    int a=10; //initializing variable of short data type
    Long b;     //declaring int variable
    b=a;    //implicit type casting
    printf("%d\n",a);
    printf("%d\n",b);
}
```

```c
#include <stdio.h>

main() {
   int  i = 17;
   char c = 'c'; /* ascii value is 99 */
   float sum;
   sum = i + c;
   printf("Value of sum : %f\n", sum );
}
```

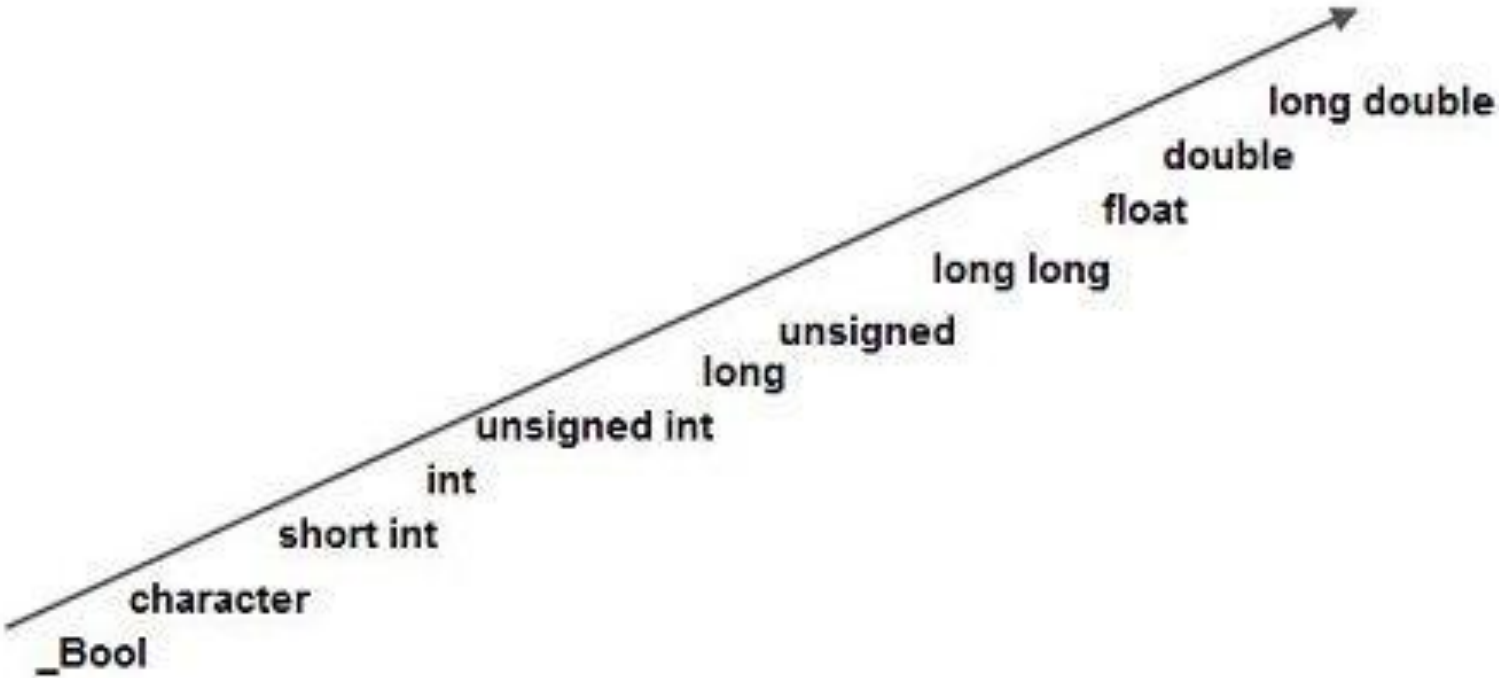
```
Value of sum : 116.000000
```

int/int=int

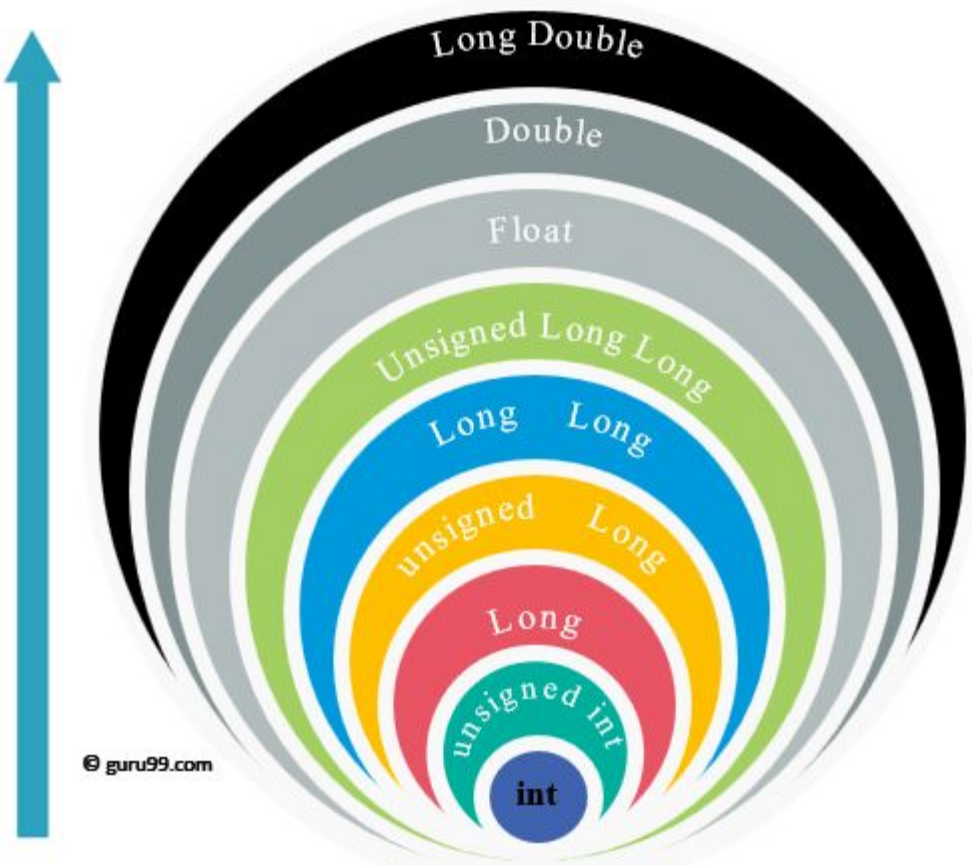
float/int=float

int/float=float

float/float=float



Ranks allocated for implicit conversion (the arrow points to the higher rank)


Long Double
Double
Float
Unsigned Long Long
Long Long
unsigned Long
Long
unsigned int
int
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Explicit Type Conversion or Type Casting:

The type conversion performed by the programmer by posing the data type of the expression of specific type is known as explicit type conversion. The explicit type conversion is also known as type casting.

Type casting in c is done in the following form:

```
(data_type)expression;
```

The following rules have to be followed while converting the expression from one type to another to avoid the loss of information:

1. All integer types to be converted to float.
2. All float types to be converted to double.
3. All character types to be converted to integer.

Example 1(without type casting):

```
int x=7, y=5 ;
float z;
z=x/y;
//Here the value of z is 1*
```

Example 2(Type Casting)

```
int x=7, y=5;
float z;
z = (float)x/(float)y;

/*Here the value of z is 1.4*/
```

What is Type casting

Type casting is a way to convert a variable from one data type to another data type.

For example, if you want to store a long value into a simple integer then you can type cast long to int. You can convert values from one type to another explicitly using the cast operator.

cast operator: (type_name) expression

It is best practice to convert lower data type to higher data type to avoid data loss.

Data will be truncated when higher data type is converted to lower. For example, if float is converted to int, data which is present after decimal point will be lost.