# C Language Data Types and Arithmetic Operations

ZenIndo Solutions Pvt Ltd.
Hyderabad, Telangana, India

# Data Types

Char : Single Byte – holds one character

Int : Integer – size depends on the host machine

Qualifiers : short, long

| Short (at least) | Int | Long (at least) |
|---|---|---|
| 16 bits | 16 or 32 bits | 32 bits |

Signed, Un-signed :

In an 8 bit machine, the below are the possible numbers for signed and un-signed numbers (2 power n)

| Signed | Un-signed |
|---|---|
| 0 to 255 | -128 to 127 |

Float : Single precession floating point (generally 6 digits precession)

Double : Double precession floating point (generally 14 digits precession)

* The precession is compiler dependent

# Data Types

## Const Qualifier

```
#include <stdio.h>
#define pi 3.14159265
main()
{
    int radius = 5 ;
    printf("Circumference of a circle with radius 5 is = %f \n ", 2*pi*radius );
 }
```

```
#include <stdio.h>
main()
{
    const  double  pi =  3.14159265 ;
    int radius = 5 ;
    printf("Circumference of a circle with radius 5 is = %f \n ", 2*pi*radius );
 }
```

# Data Types

## Const Qualifier

```
#include <stdio.h>
main()
{
        const  char  val_of_a = 'A' ;    /* character  constant */

        printf(" value of \'A\' is %d" , val_of_a  );
}
```

# Declarations

```
double   temp_in_c,  temp_in_f ;
char  B = ‘A’  +1 ;     /* ‘A’ ascii code is 65. ‘B’ ascii value is 66 */
```

# Arithmetic Operators

+ , -. *. / and % (modulus)

The % operator cannot be applied to float or double

# Precedence Order

Evaluation

| Operator | Precedence Order |
|---|---|
| + and - | Low |
| * , / and % | high |

Ex. (2*10 / 5 + 2+3 %2   )  = 7

# Increment and Decrement Operators

++ and --

| Operator | Meaning |
|---|---|
| i++ | Increase I value by 1 |
| i-- | Decrease I value by 1 |
| X = I++ | Assign I value to a<br>Increment I value by 1 |
| X = ++I | Increment I value by 1<br>Assign I value to X |