

C Tips & Tricks

- Bitwise operations
- Bit Masking
- Simple Macros
- Variable & Operation types
- Static & Global

Quiz-1 ! – (Bitwise operations)

- For the C statements
 - `Int A = 2;`
 - `Int B = 5;`
 - `If (A & B)`
 - `cout << " Ebbo is Baskota";`
 - `Else`
 - `cout << " Ebbo isn't Baskota";`
 - From the C point of View, is Ebbo Baskota ?

Quiz-1 ! (Bitwise operations)

- For the C statements
 - `Int A = 5;`
 - `If (!A)`
 - `cout << " Ebbo isn't Haddota";`
 - `else if (~A)`
 - `cout << " Ebbo is Haddota";`
 - From the C point of View, is Ebbo Hadota ?

Quiz-1 !

- For the C statements
 - Int A = 7, B=9;
 - Int Ebbo = A & B;
 - Switch (Ebbo)
 - Case 3 :
 - cout << "Mesh Hathebbbo ";
 - Case 7 :
 - cout << "Bardo Meh Hathebbbo";
 - Case 1 :
 - cout << " HATHEBBO";
 - From the C point of View, Will you love Ebbo or not ?

Quiz - 2: Bitwise manipulation

- Ask the user to enter a positive integer number. *Without using the division operator*, tell him whether the number is odd or even.
 - As an Example:
 - Please enter an integer : 5
 - The number you entered is odd.

Quiz - 2: Bitwise manipulation

- Ask the user to enter a positive integer number. *Without using the division operator*, tell him whether the number is odd or even.
 - As an Example:
 - Please enter an integer : 5
 - The number you entered is odd.

```
If(number & 1)
    // Number is odd
else
    //Number is even
```

Quiz – 3 (Bit masking)

- Suppose you have an 8-bit register called Ebbo. You want to **set the bit number 3** in Ebbo *without affecting the other bits*. How can you do this ?

Quiz – 3 (Bit masking)

- Suppose you have an 8-bit register called Ebbo. You want to **set the bit number 3** in Ebbo *without affecting the other bits*. How can you do this ?
- `EBBO = EBBO | 0b00001000;`

Quiz – 3 (Bit masking)

- Suppose you have an 8-bit register called Ebbo. You want to **set the bit number 3** in Ebbo *without affecting the other bits*. How can you do this ?
- `EBBO |= 0b00001000;`

Quiz – 3 (Bit masking)

- Suppose you have an 8-bit register called Ebbo. You want to **set the bit number 3** in Ebbo *without affecting the other bits*. How can you do this ?
- `EBBO |= (1<<3);`

Quiz – 4 (Bit masking)

- Suppose you have the following C code:
 - `Int Ebbo=9;`
 - `Ebbo &= 0<<3`
 - `Cout << Ebbo`
- What will be the printed value of Ebbo ?

Quiz – 4 (Bit masking)

- Suppose you have the following C code:
 - `Int Ebbo=9;`
 - `Ebbo &= 0<<3`
 - `Cout << Ebbo`
- What will be the printed value of Ebbo ?
- Not correct : `Ebbo &= (0<<3)`
- Correct : `Ebbo &= ~(1<<3)`

Quiz – 5 (Bit masking)

- How can you toggle the status of all bits of Ebbo?
How can you toggle only bits 2 and 3 ?

Quiz – 5 (Bit masking)

- How can you toggle the status of all bits of Ebbo? How can you toggle only bits 2 and 3 ?
- To toggle the whole Ebbo
 - `Ebbo = ~Ebbo;`
 - `Ebbo = Ebbo ^ 0b11111111` (Suppose Ebbo is 8 bit Register)
 - `Ebbo ^= 255;` (*What is this?*)
- To toggle only bits 2 and 3
 - `Ebbo ^= 0b110;` (*should it be 0b00000110 ?*)

Quiz – 6 (Macros) What is the difference?

```
int car = 5;
```

```
Int ship = 7;
```

```
Int plane = car + ship;
```

```
Cout << plane;
```

```
#define car 5;
```

```
#define ship 7;
```

```
Int plane = car + ship;
```

```
Cout << plane;
```

Quiz – 7 (Macros)

- Consider the following code:

```
#define car 5
```

```
#define ship 7
```

```
ship = 5;
```

```
car = 7;
```

```
int plane = ship + car;
```

- * What is the value if the plane ?

Quiz – 7 (Macros)

- Consider the following code:

```
#define car 5
```

```
#define ship 7
```

```
ship = 5;
```

```
car = 7;
```

```
int plane = ship + car;
```

- * What is the value if the plane ?

Compilation Error!

Useful Macros

- Setting bit number b in register r
 - `#define bit_set(r,b) r|=(1<<b)`
- Clearing bit number b in register r
 - `#define bit_clear(r,b) r&= ~(1<<b)`

Quiz-8 (Variable & Operation Types)

- Consider the following code

```
int x = 5;
```

```
Int y = 10;
```

```
Int z;
```

```
z = x/y*20;
```

What is the value of z ?

Quiz-8 (Variable & Operation Types)

- Consider the following code

```
char x = 5;
```

```
char y = 10;
```

```
char z;
```

```
z = x*y*10;
```

What is the value of z ?

Example: Global & Static Variables.

- Write a C/C++ code that implements two functions: Ebbo1 and Ebbo2. The program asks the user *continuously* to enter number 1, 2 or 3. Based on the user choice the program calls Ebbo1, Ebbo2 or exit. Each time a function is called it displays a message saying “Hi, I’m Ebbo(1,2) and I’ve be called x times” where x is the number of times the function is called.