**Pattern**

Q1. Print pattern

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1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

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1

2 3

4 5 6

7 8 9 10

**NUMBER SYSTEM**

* Decimal 0-9 (10)
* Octal 0-7 (08)
* Hexa Decimal 0-15 (16)
* Binary 0-1 (02)

**Q Why system use binary number system only ?**

Ans. As for decimal need to maintain 10 different voltages , due to variety of voltage and high difference in them -> can be affected via external factor. Due to large variety , it reduces life of hardware

So we prefer binary i.e 2 voltages stage therefore :- need to convert all number system to binary system itself

Example of conversion :-

(250)10 =(11111010)2 = (372)8 = (FA)16

Convert 100 in every decimal system

(100)10 =(01100100)2 = (144)8 = (64)16

**Features**

* Java is a platform independent language

Windows Mac

Lets suppose +(binary equivalent) => 011 010

Lets suppose -(binary equivalent) => 010 011

Suppose you run => sum=10+20;

* If compile in windows then run in mac instead adding but do subtraction => as hardware just understands binary only and binary equivalent of plus in windows may refer for subtraction in mac.
* Now , with java => Platform independency refer => It converts source code in byte code => that later convert into source code (with the help of JVM) and JVM is differ by O.S

**DATA TYPES**

**Primitive Size**

* Short 2Bytes
* Int 4Bytes
* Long 8Bytes
* Char 2**B**ytes
* Float 4Bytes
* Double 8Bytes
* Boolean 0Bytes/1 bit (Not Specific)

**Non-Primitive**

* String

We deal in bits => 8 bits = 1 Bytes