Decode Java+DSA

Chapter 1 : Basics

1) Output
2) Variables & Operators
3) Variable naming rules
4) Comments
5) Input
6) Modulus Operator
7) Typecasting
8) Hierarchy
9) Char and ASCII

IntelliJ Idea and JDK

Basic program in Java

filename

```
[redacted]{
    public static void main(String args[]){

        System.out.print("Hello World");

    }

}
```

Output :

Hello World

How to move in next line?

Example :

```
System.out.print("Hello PW");

System.out.print("Hello CW");
```

Output will be :

```
Hello PWHello CW
```

↓

why ?

How to move in next line?

Example :

```
System.out.println("Hello PW");

System.out.print("Hello CW");
```

Output will be :

```
Hello PW

Hello CW
```

Variables and their Declaration

Dabbe

Let us focus on int data type as of now.

1) Variables as containers :

↓

integers ko store karayenge

```java
int x;
x = 6;
System.out.println(x);
```

Output

- 6
-

SKILLS

```java
int x;
x = 8;
System.out.println(x);
x = 10;
System.out.println(x);
```

Output

- 8
- 10

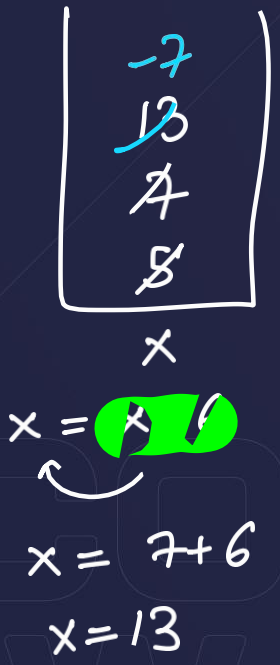
Printing Variables & Updation of Variables

```
int x = 5;
System.out.println(x);
x = 7;
System.out.println(x);
x = x + 6;
System.out.println(x);
x = x - 20;
System.out.println(x);
```

$x = x + 6$

↓

assigning



Output

- 5
- 7
- 13
- -7
-

Arithmetic operations on int data type

```
int x = 5;
int y = 2;

System.out.println(x+y);

System.out.println(x-y);

System.out.println(x*y);

System.out.println(x/y);

issue
```

→ 7

→ 3

→ 10

1
2

x / y = int = 2

int int

5/2 = 2

39/10 = 3

-23/10 = -2

Increment - Decrement operators

```
int x = 5;
x +;

System.out.println(x);

x -;

System.out.println(x);

 +x;

System.out.println(x);

--x;


System.out.println(x);
```

double & float data type

```
double x = 3.1;

float f = 2.87f;
```

int x = 4;

Arithmetic operations on float data type

double

```
double x = 5, y = 2;
System.out.println(x+y);
System.out.println(x-y);
System.out.println(x*y);
System.out.println(x/y);
```

Example : Calculating Area of a Circle

$$a = \pi r^2$$

$$a = 3.141592 * r * r$$

```
double r = 5.2;
double a = 3.1415 * r * r;
sout(a);
```

Homework : Calculate Volume of a Sphere

Example : Calculating Simple Interest

$$SI = \frac{PRT}{100}$$

$$\frac{2000 \times 3.75 \times 3.5}{100}$$

$$70 \times \frac{375}{100}$$

$$\begin{array}{r} 375 \\ \times\ 7 \\ \hline 2625 \end{array}$$

$$262.5$$

Variable Naming rules

1) Variables can start from an alphabet or underscore _ or $.
2) Special characters except _ and $ are not allowed.
3) Some particular keywords are not allowed.
4) Commas or blanks are not allowed.

auto	double	int	break	extern	enum	unsigned	while
case	sizeof	for	const	static	long	continue	float
else	signed	do	short	switch	char	volatile	default
goto	struct	if	union	return	void	register	typedef

Variable Naming rules - Examples

q. Which of the following are invalid variable names and why?

BASICSALARY

_basic

group.

mindovermatter

population in 2006

hELLO

FLOAT

Taking input // Square of a Number

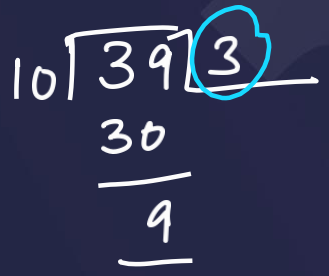
Take 2 numbers input from user and print their Sum

Modulus Operator

39/10 = 3

+, -, *, /, %

a%b = gives the remainder when a is divided by b



36 % 10 = 6

Modulus Operator [Properties]

1) $a \% b = a \quad [a < b]$

2) $a \% (-b) = a \% b$

3) $(-a) \% b = -[a \% b]$

Typecasting

ques : Take integer 'x' as input and print half of the number.

↓

```
int x = sc.nextInt();
```

Hierarchy of operators

BODMAS

Left to Right

```
int i = 2 * 3 / 4 ;
```

sout(i);

B > D,M > A,S

Maths

2 * [redacted]

2 * 0.75

= 1.5

[redacted] / 4

6/4

= 1.5

Java

2 * 3/4

= 2 * 0

= 0

2 * 3/4

= 6/4

= 1

int/int , int/double, double/int, double/double

```
double x = 5;
double y = 2;
Sout(x/y);
```

2.5

x / y (y: double)

double

```
double x = 2;
Sout(x);
```

2.0

5/2 (int) ⇒ 2

int

char data type

```
char ch = 'a';
```

ASCII values

```
char ch = 'a';
```

'B' → 66

'C' → 67

⋮

'Z' → 90

'b' = 98

'c' = 99

'd' = 100

⋮

'z' = 122

'1' → 49

'2' → 50

⋮

'9' → 57

MCQ Time !

Homework

In b = 6.6 / a + 2 * n ; which operation will be performed first?

(1) 6.6 / a

(2) a + 2

(3) 2 * n

(4) Depends upon compiler

MCQ

Which of the following statements is false

(1) Each new Java instruction has to be written on a separate line F

(2) [redacted] all Java statements are entered in small case letters T

(3) Blank spaces may be inserted between two words in a Java statement T

(4) Blank spaces cannot be inserted within a variable name T

Homework

The expression, double a = 7 / 22 * (3.14 + 2) * 3 / 5 ; evaluates to

(1) 8.28

(2) 6.28

(3) 3.14

(4) 0

MCQ

%, /, * > +, -

The expression int x = 4 + 2 % - 8 evaluates to

(1) -6

(2) 6

(3) 4

(4) None of the above