

Today's Session Agenda:

→ Hackerrank Question

→ Logical Operator

→ And Operator

→ OR operator

→ Not operator

→ Lossy Conversion in terms of
data-types

Hacker Rank Discussion:

Greater than 100 or not

Problem

Submissions

Leaderboard

Discussions

You will be given an integer as input, you have to print true if the number is greater than 100, and false otherwise.

Test Case 1:

Input: 110

Output: true

```
{Scanner scn = new Scanner(System.in)
    int n = scn.nextInt();
    print(n>100);}
```

Explanation: Since the given input is greater than 100, we printed true.

Note. System.out.println() → comparisons operator
(T/F)

$>$, $<$, $>=$,
\leq , $=$,
\neq

```
/* Enter your code here. Read input from System.in */
Scanner scn = new Scanner(System.in);
int n = scn.nextInt();
System.out.println(n > 100);
```



Sum is less than 150 or not.

Problem

Submissions

Leaderboard

Discussions

You will be given three integer inputs x, y, z . You have to find the sum of these inputs. Print true if the sum is less than 150 and false otherwise.

Input Format

For each test case, In the first line, you will be given the value of x . In the second line, you will be given the value of y . In the third line, you will be given the value of z .

Scanner scn = new Scanner (system.in);
x } } input
y
z
int sum = (x+y+z);
print (sum < 150) → T/F

```
Scanner scn = new Scanner(System.in);
int x = scn.nextInt();
int y = scn.nextInt();
int z = scn.nextInt();
int sum = x+y+z;
System.out.println(sum < 150);
```

xyzw

Problem

Submissions

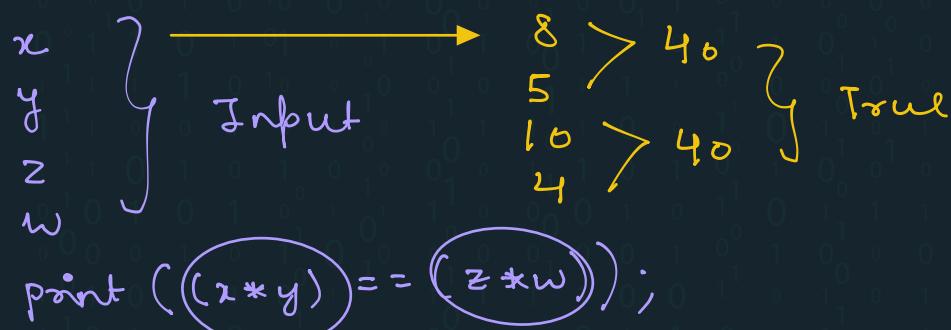
Leaderboard

Discussions

You will be given four integer inputs x, y, z, w . Print true if $x*y$ is equal to $z*w$ and false otherwise.

Input Format

For each test-case In the first you will get x as integer input. In the second you will get y as integer input. In the third you will get z as integer input. In the fourth you will get w as integer input.

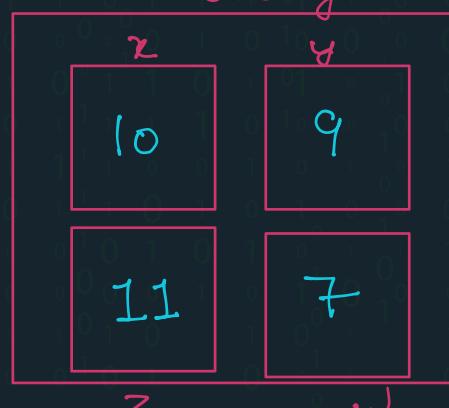


```
public static void main(String[] args) {
    /* Enter your code here. Read input from STDIN.
       Scanner scn = new Scanner(System.in);

    int x = scn.nextInt(); 10
    int y = scn.nextInt(); 9
    int z = scn.nextInt(); 11
    int w = scn.nextInt(); 7

    System.out.println((x*y) == (z*w)); 90 77
} → False
```

Memory



Even or not

[Problem](#)
[Submissions](#)
[Leaderboard](#)
[Discussions](#)

You have to take an integer as input and print true if it is an even number and false otherwise.

Input Format

For each test case, you will be given an integer input.

Constraints

$$n \% 2 == 0$$

even

$$n \% 2 == 1$$

odd

$$n \% 2 != 0$$

Scanner →

```
int n = scn.nextInt();
System.out.println(n%2==0);
```

```
Scanner scn = new Scanner(System.in);
int n = scn.nextInt();
System.out.println(n%2==0);
```

Logical Operators:

→ And Logical Operator.

→ OR Logical Operator.

→ Not Logical Operator.

And Logical Operator: [&&]

	Cond 1	Cond 2	Result
Cond1	T ✓	T ✓	T
	T ✓	F ✓	F
	F ✓	T	F
	F ✓	F	F

1 case True

3 cases
False

a = 10, b = 20, c = 20

condition1: a < b } 10 < 20 → True
condition2: b == c 20 == 20 → True

if condition1 && condition2
d = a+b+c
10 + 20 + 20 = 50

// Since both the conditions are true

d = 50.

```
int age = 24;
int salary = 950;
boolean result;

result = (age>=18 && salary > 600);
System.out.println(result); //true
```

```
result = (age>=18 && salary > 1000);
System.out.println(result); //false
```

OR Logical Operator: [||]

Cond1 || Cond2

Cond1. Cond2 Result

Cond1	Cond2	Result
T	T	T
T	F	T
F	T	T
F	F	F

3 cases

True

1 case
False

a = 10, b = 20, c = 20

condition1: a < b

$10 < 20$

T

condition2: b > c

$20 > 20$

F

if(condition1 || condition2)

T

d = a+b+c

$10 + 20 + 20 = 50$

// Since one of the condition is true //comment

d = 50.

```
int age = 24;
int salary = 950;
boolean result;
```

```
result = (age>=18 || salary > 1000);
System.out.println(result); //true
```

```
result = (age>=30 || salary > 1000);
System.out.println(result); //false
```

Not Logical Operator [!]

→ **!** (Condition)

Cond	Result
T	F
F	T

Truth Table

Eg :

$$a = 10$$

$$b = 20$$

$$\begin{array}{c} ! (a < b) \rightarrow \text{False} \\ \hline 10 < 20 \end{array}$$

$$! (T)$$

$$\begin{array}{c} ! (a > b) \rightarrow \text{True} \\ \hline 10 > 20 \\ ! (F) \end{array}$$

```
int age = 24;
boolean result;

result = !(age>=24); // 24>=24 -> !(T) -> F
System.out.println(result); // false

result = !(age==25); // (24==25) -> !(F) -> T
System.out.println(result); //true
```

Logical Operator Challenges:

 Short Switching:

Boolean ans =

3 > 2 **&&** **14 > 3**

T
F
T
T

&&

Boolean ans =

40 > 3 **&&** **40 > 50**

T

F

&&

F

ghost
switching

2nd cond
(ignore)

Boolean ans =

40 >= 40 **||** **50 >= 2 * 25**

cond 1

optional

40 >= 40 **||** **50 >= 2 * 25**

T

T / F

OR logic

T → || or logical

So, I can ignore the 2nd cond^n

Boolean ans =

$$(2 \times 3 == 4 \text{ cond1 } \&\& 6 \times 4 == 9 \text{ cond2 }) \text{ optional T/F } || (4 > 2)$$

→ Bracket priority → $F \text{ || } T \rightarrow$ True
 → moving from left to right dirn.

Note:

False with && logic
 creates short switching

Short switching

T with OR

F with And

Cond1: **Boolean ans =**
 $(4 > 5) \&\& (3 > 5 \&\& 80 == 2 \times 40) \text{ Cond2}$

False

&&

False

optional T/F

Boolean ans =

$$\begin{aligned} & ((20 \times 5 == 100) \quad || \quad 10 == 10) \quad \&\& \\ & ((30 \times 2 == 60) \quad || \quad 40 > 30) \end{aligned}$$

$$(60 == 60) \quad \text{True}$$

$$(\text{True}) \quad \&\& \quad (\text{True})$$

True

Boolean ans = $\neg(30 > 20)$

False

Boolean ans = $\neg(30 == 30)$

False

Boolean ans =

$!(30 >= 20 \boxed{\quad} \boxed{\quad} 40 >= 10)$

T

optional

! [T] → False

Boolean ans = False

$!(20 * 4 + 40 >= 100 \boxed{\quad} \boxed{\quad} 20 == 10) \boxed{\quad} \&\&$
 $(3 * 2 <= 60 \boxed{\quad} \boxed{\quad} 4 >= 30)$

optional

False

$20 * 4 + 40 = 120 >= 100 \rightarrow \text{True}$

! (T) → False

Compiler
will check
each &
every condn

- Does the compiler also take the benefit of short circuiting?

Boolean ans =

$!(20 \% 3 == 2)$

! (True)

$\sqrt[6]{20}$

18

$\boxed{2}$

→ rem

False

Boolean ans =
 $(!(40==40) \&\& 80>36)$

! True

False

False

Boolean ans =
 $(!(50>20) \mid\mid 90>2\times45) \&\& (30!=2\times15)$

True

optional

True

final Ans

False

Lossy Conversion :

• 8

int

int ans =

$$= 3.3 + 2.9 + 7.6$$

= 13.8

double

decimal

Integer
No.

Decimal
value

- a. `int x=2+3` → 5
- b. `int x =3+8-29` → -18
- c. `int x =4 + 5.2 - 8.3 + 9.2 / 2`
conversion to
10
- d. `double x =4.1 + 8.9 + 3.5` → $4.1 + 8.9 + 3.5 = 16.5$
- e. `int x= 4 * 3 / 8 + 2.5 * 2 / 2`
conversion Bodmas → $(*) > [\cdot \% /] > (+ -) < ^$
6
- f. `double x=22 + 4 * 2` → $22 + 8 = 30.0$
- g. `double x=8 / 5 + 13 / 2`
- h. `double x=8.0/5 + 13/2`
- i. `double x=8.0/5 + 13.0/2`
- j. `int x= 392 / 10 % 10 / 2`
- k. `int x= 39%2*3`

left to right



$$9.2 - 8.3 \\ 0.9 + 9.2 = 10.1$$

$$13 + 3.5 = 16.5$$

$$12 / 8 \rightarrow 1 + 2.5 * 2 \\ () > [* \% /] > (+ -) < ^$$

$$22 + 8 = 30.0$$

$$\frac{1}{5} + \frac{6}{2} = 7.0$$

$$\text{g. double } x = \frac{8}{5} + \frac{13}{2}$$

$$\frac{1.6}{6} = 7.6$$

$$\text{h. double } x = \frac{8.0}{5} + \frac{13}{2}$$

$$\text{i. double } x = \frac{8.0}{5} + \frac{13.0}{2}$$

$$\text{j. int } x = \frac{392}{10 \% 10 / 2}$$

$$\text{k. int } x = \frac{39 \% 2 * 3}{39 \% 10}$$

$$9 / 2 = 4$$

$$39 \% 2 = 1 * 3$$

$$= 3$$