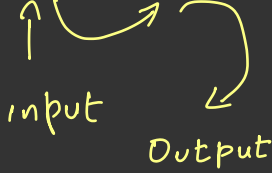


Functions

function

$$f(x) = x^2$$



$$I/P \ 3 \Rightarrow 9$$

$${}^n P_r \Rightarrow \frac{n!}{(n-r)!}$$

$$\frac{n!}{(n-r)!} \quad \left[\frac{n!}{(n-r)!} \right]$$

$$\boxed{{}^n P_r}$$

n, r Input

int nfact = 1; // fact(n);

for (int i = 1; i <= n; i++)

 nfact * = i;

3

int nmract = 1;

for (int i = 0; i <= n-r; i++)

 nmract * = i;

Repeat

```
int nPr = nfact / nmafact;  
syso (nPr
```

DRY

Don't Repeat Yourself

return type

```
Public static int fact (int n) { Parameters
```

→ int factorial = 1;

→ for (int i = 1; i <= n; i++)

→ factorial * = i;

name of
fn

→ return factorial;

}

```
Public static void main() {
```

→ Scanner scn = new Scanner(System.in);

→ int n = scn.nextInt();

→ int r = scn.nextInt();

→ int nfact = fact(n); // calling fact

→ int nmafact = fact(n-r);

with n as
argument

→ int nPr = nfact / nmafact;

→ syso (nPr);
}

Memory (RAM)

| | | | |
|-------------|---|----------|------|
| <u>main</u> | { | nPr | 2011 |
| | | nmaxfact | 6. |
| | | nfact | 120. |
| | | sz | 2. |
| | | n | 5.. |
| | | scn | |

Stack

console

20

MULTIDIMENSIONAL ARRAY

↳ 2D Array



Matrix

col



```
int arr[][] = new int [3][4];
```



↓
row

Its a 2D
Array

Abstract View

0 1 2 3

0

arr[0][0] [0][1] [0][2] [0][3]

1

[1][0] [1][1] [1][2] [1][3]

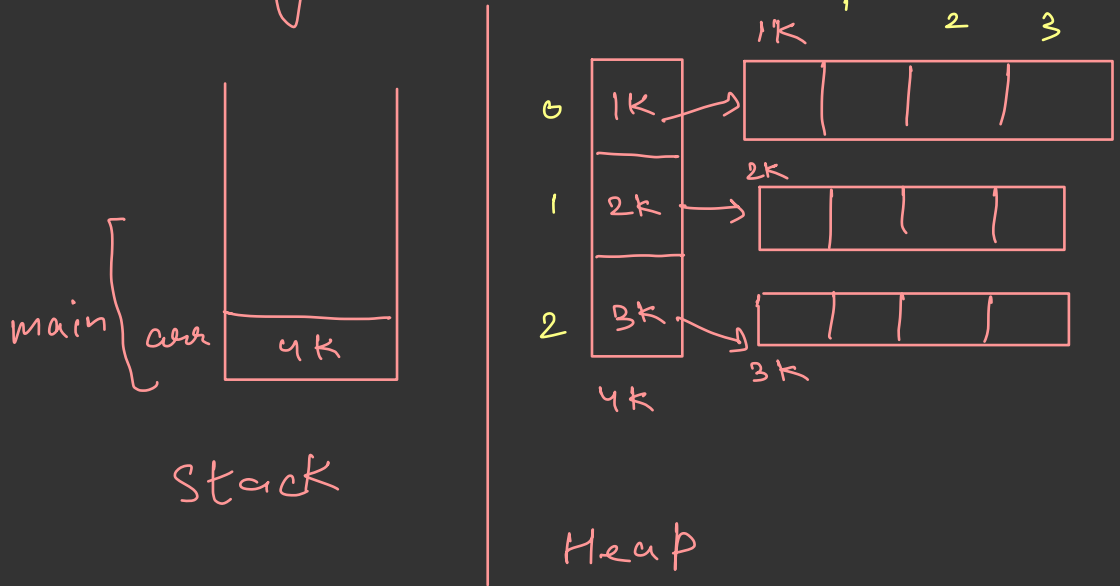
2

[2][0] [2][1] [2][2] [2][3]

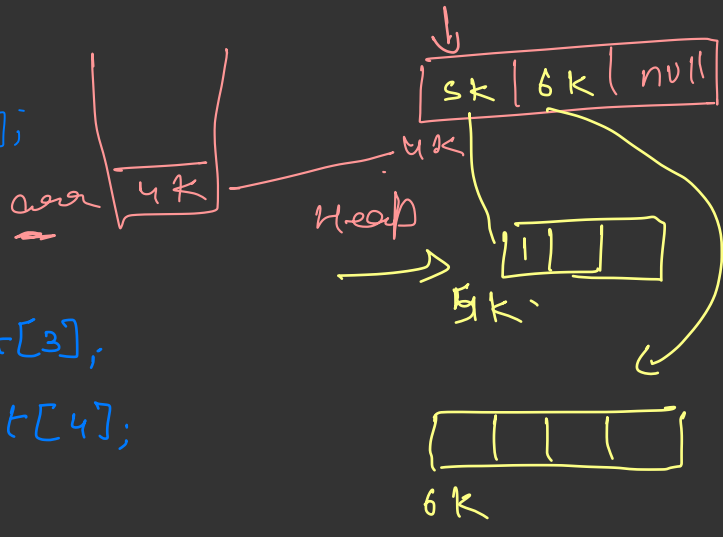
| | | | | |
|--|-----------|--------|--------|--------|
| | arr[0][0] | [0][1] | [0][2] | [0][3] |
| | [1][0] | [1][1] | [1][2] | [1][3] |
| | [2][0] | [2][1] | [2][2] | [2][3] |

→ `int arr[3][4];`
 → `arr = new int[3][4];`

Memory



`int arr[3][4];`
`arr = new int[3][4];`



⇒ `arr[0] = new int[3];`
`arr[1] = new int[4];`
`arr[0][1] = 1;`

Ques Zigzag Print

| | | | |
|---|---|----|----|
| 2 | 1 | 4 | 5 |
| 6 | 7 | 10 | 1 |
| 2 | 3 | 12 | 14 |

2, 1, 4, 5, 1, 10, 7, 6,
2, 3, 12, 14