

DSA - DAY - 7



$\frac{1}{2} \log n$

facto

Fibonacci

1  
1  
2  
3  
5  
8  
13  
21  
34  
55  
89  
144  
233  
377  
610  
987  
1597  
2584  
4181  
6771  
10955  
17716  
28672  
46388  
75060  
121448  
196508  
317956  
514464  
832420  
1346896  
2178312  
3525216  
5698528  
9223744  
14922272  
24145016  
39067232  
63132248  
102199480  
165331728  
267531208  
432862936  
700394144  
1133257080  
1833614160  
3000871240  
4834485400  
7835356640  
12669841000  
203051976400  
329750486400  
532802462800  
862552949200  
1395355411000  
2257907360200  
3653262771200  
5911169731400  
9564432472600  
15475592204200  
25039915329100  
40515516881000  
65555438557800  
105970955418800  
171926393936600  
277902759355400  
455829153291000  
733731312646400  
1200000000000000

CLASSEmate  
Date \_\_\_\_\_  
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## \* Revision Week - I

- \* How to Approach to solve Prog q.
- \* Algorithm
- \* Compiler
- \* Interpreter
- \* IDE
- \* Flowchart
- + Components of Flowchart
- \* PseudoCode

- \* Variable
- # Data type.
  - Primitive
  - Derived
  - Defined
  - Array
  - Structures
- # Variable Naming Convention
- # sizeof() — gives size of data.
- \* Storage of Data
  - ① Positive No
  - ② Negative No → 2's complement
  - ③ Explicit Method
- \* Typecasting
  - ① Implicit
  - ② Explicit
- \* Reading a Number from memory
  - ① Positive
  - ② Negative → 2's complement
- \* signed vs unsigned.

## \* Operators

- ① Arithmetic :- (+, -, \*, /, %)
- ② Relational :- (>, <, ≥, ≤, !=, ==)
- ③ Logical :- (P & Q) ||, !P
- ④ Assignment :- (=)

\* conditional

- (i) if-else
- (ii) if-else if

\* Loops:- for loop (we want some task repeated then we use loops).

\* Pattern (improving and logic) - ~~rows & col~~  
~~etc.~~

\* Flowchart examples :-

i) Add 2 numbers a & b  
sum = a + b;

ii) Find circumference of circle.  
circum =  $2\pi r$ ;

iii) Average of 5 numbers.  
avg =  $a+b+c/3$ ;

iv) Check No is odd or even  
num % 2 == 0 → even  
num % 2 != 0 → odd

v) Grade Problem

- if marks > 90 → A
- if marks > 80 → B
- if marks > 70 → C
- if marks > 60 → P
- if marks < 60 → F

(vi)

Check No is +ve, -ve or 0

if (num > 0) — positive  
if (num < 0) — (-ve)  
else — 0.

(vii)

Print counting from 1 to N

int i=1

if (i > N) — end

else print i & i+=1.

(viii)

Add 'n' numbers from User.

int i=1;

int sum=0;

if (i > n) — print sum

else sum+=i; i=i+1;

(ix)

Printing 1 to N but only odd no

int i=1;

if (i > N) — end

else print(i) i+=2;

(x)

Find perimeter of triangle

perimeter = a+b+c;

(xi)

Find Simple Interest

SI = P \* R \* T / 100;

(xii)

Print counting from N to 1

int i=N;

if (i < 1) then end  
else print i i-=1;

$$0! = (n-1) \times \dots \times 1.$$

q. Find factorial of number.

```
int i=1 fact=1
if(i>n) point fact
else fact=fact*i;
i++;

```

### \* Pattern Questions

$n = EOD - 1$

①	0	- - - - -	/
	1	- - -	2 3   2
	2	- -	3 4 5   4 3
	3	-	4 5 6 7   6 5 4
	4		5 6 7 8 9   8 7 6 5

EOD=0 col=0

i) Space —  $n - EOD - 1 \leftarrow$  point

ii) First Half No — go for EOD+1 print col+1;

iii) Second Half No — go for EOD. print  $2 * EOD - col$

②	- - - - *
	- - - * *
	- * * *
	- * * *
	* * * *

EOD=0; EOW<n;

i) Space :-      (i) go for col <  $n - EOD - 1$   
                           (ii) print " "

ii) Star :-      (i) go for col < EOD+1  
                           (ii) print " \* "

## Q. 1 Numeric Half Pyramid

```

0   1
1   1 0
2   1 2 8
3   1 2 3 4 0
4   1 2 3 4 5 6
5   1 2 3 4 5 6

```

- ① ~~for~~ go for col < row + 1  
 print col + 1

## Q. Hollow Pyramid Rectangle.

\* \* \* \* \*

\* \* \* \* \*

\* \* \* \* \*

\* \* \* \* \*

external for row < n

mn input

- ① print star      ① go for col < m  
 if  
 ② print if (row == 0 || row == m - 1) col == 0 || col == m - 1  
 ② print space — else print " "  
 if

Q

```

* * * *
* * * *
* * * *
* * * *

```

# Solid Square

external for loop , EOWCN .

- ① print star - go for EOWCN  
print " \* ".