

Recursion

→ when a function calls itself until a specified condition is met.

→ Stack Overflow:-

when there's not specific condition in a recursion to end the recursion the computer will run out of memory.

Basic Question to start with.

- ① Print Name 5 times
- ② Print linearly from 1 to N
- ③ Print from N to 1
- ④ Print linearly from 1 to N (Backtrack)
- ⑤ Print from n to 1 (Backtracking)

Backtracking

Brute force Approach \rightarrow ~~select~~

\hookrightarrow Total Sample

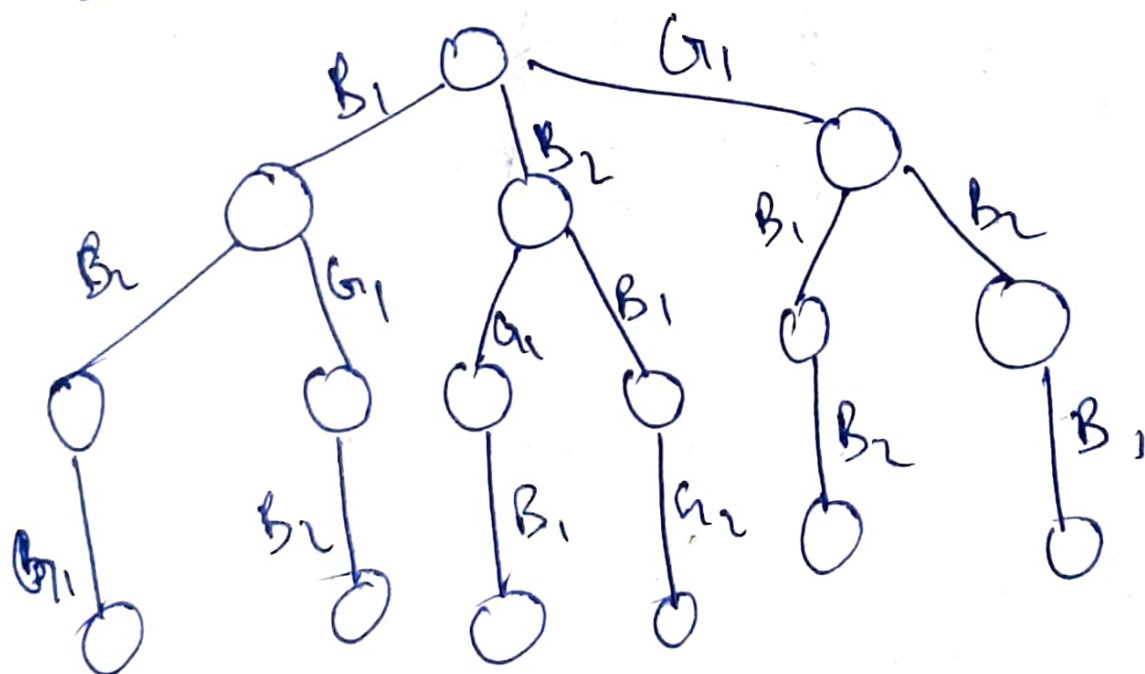
\hookrightarrow Selecting according to the condition.

example: $[B_1, B_2, G_1]$

$[n=3]$

Total = $3! = 6$

State space tree



In Brute force, Approach.

→ Every possible solution is taken and selected is taken and selected from it according to condition.

Backtracking.

```
f(i, n) {  
    if (i < 1)  
        return;  
    f(i-1, n);  
    cout << n << endl;  
}
```

→ function

$n=3$

1	$3-1=2$
2	$2-1=1$

```
(  
(  
(  
int main() {  
    int n;  
    cin >> n;  
    f(n, n);  
    return 0;  
}
```

→ [main driving]