

# CS & IT ENGINEERING

**Programming in C**

**Function and storage Classes**

**Storage Classes and Recursion**

**DPP 03** Discussion




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## TOPICS TO BE COVERED



01 Question

02 Discussion

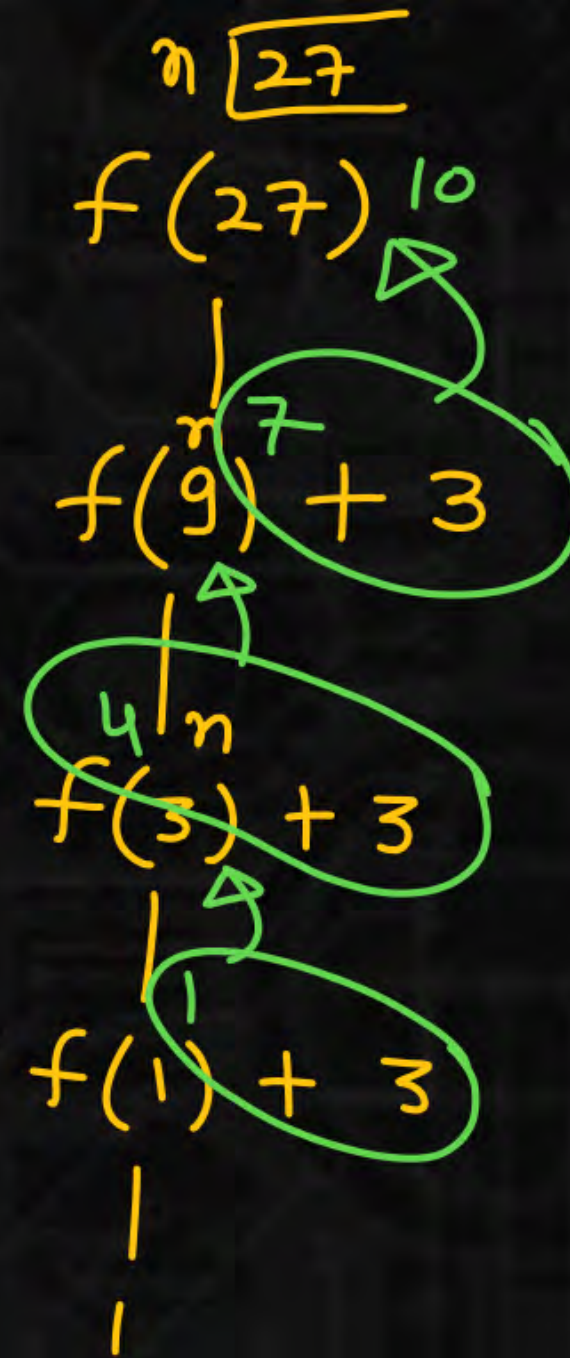
Q.1

Consider the following function:

```
int f(int n)
{
    if(n<2) return n;
    return f(n/3)+3;
}
```

The value returned by  $f(27)$  is 10

[NAT]





Q.2

Consider the following program:

```
#include<stdio.h>
```

```
static int i;
```

```
extern int i=3;
```

```
void f(int n){
```

```
    if(n){
```

```
        printf("%d\t", i++);
```

```
        f(n-1);
```

```
    }
```

```
}
```

```
int main(){
```

```
    f(4);
```

```
    return 0;
```

```
}
```

The output is:

A.

3 4 5 6 7

C.

0 1 2 3

B.

3 4 5 6

D.

Compilation error.

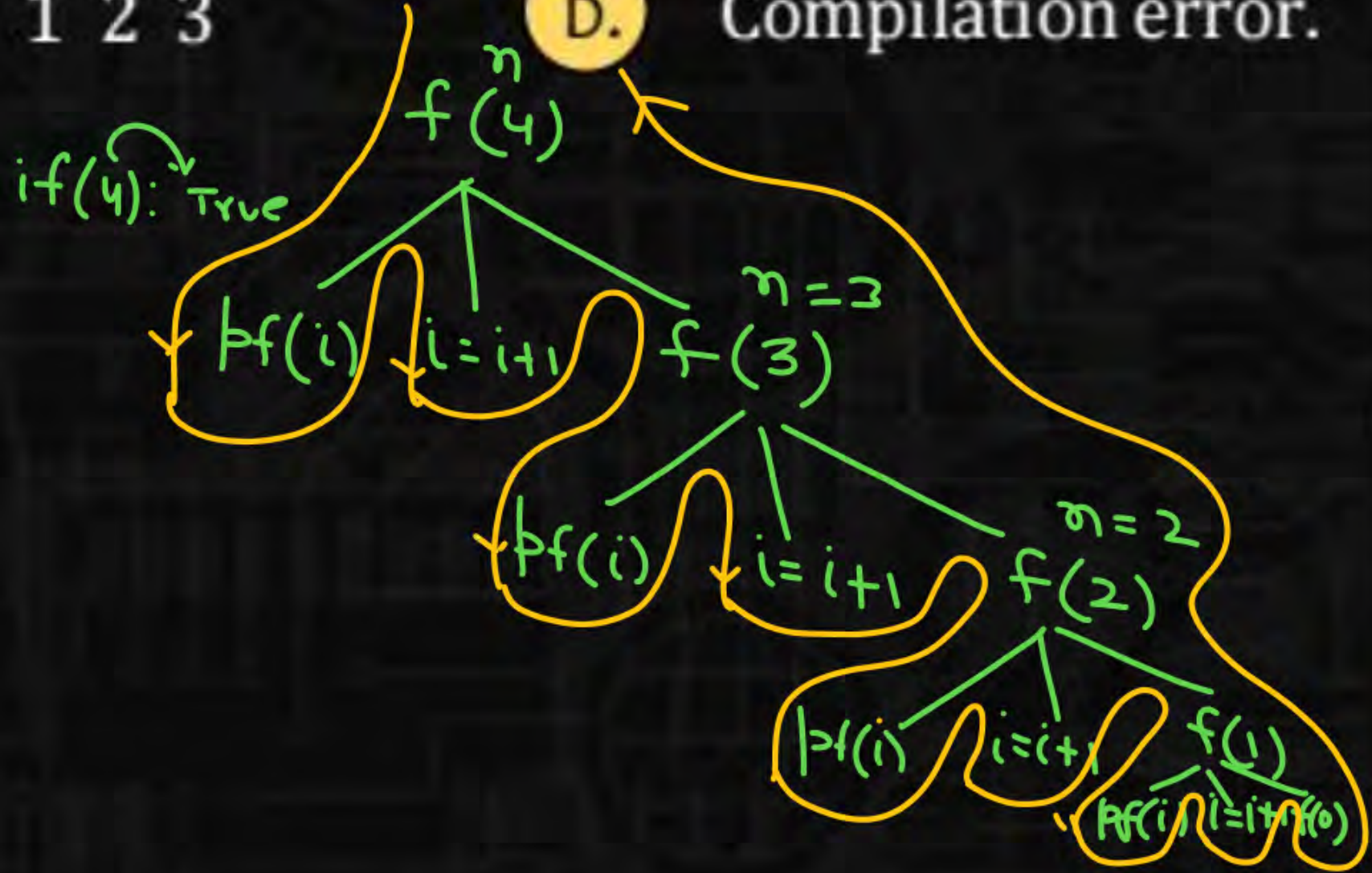
[MCQ]



⇒ No compilation Error

i 3 4 5 6 7

3 4 5 6





Q.3

Consider the following function:

```
void f(int n){  
    static int i=3;  
    if(n%2){  
        1. n+=i--;  
        2. printf("%d\t", n);  
        3. f(n-1);  
    }  
    4. n++;  
    5. printf("%d\t", n);  
}
```

o/p: 8 9 9 10 9

$n = n + i$   
 $i = i - 1$

~~3~~ 2 1

$8 + 9 + 9$   
 $+ 10 + 9$   
 $= 45$

$f(8)$

[NAT]

$n$  ~~8~~ 9

$f(7)$

1.  $n = n + i, i = i - 1$

2. ✓

3.  $f(8)$

4. ✓

5.

$n$  ~~7~~ 9 10

$f(5)$

1.  $n = n + i, i = i - 1$

2. ✓

3.  $f(7)$  ✓

4.

5.

$n$  ~~5~~ 8 9

The sum of the values printed when  $f(5)$  is called is \_\_\_\_\_



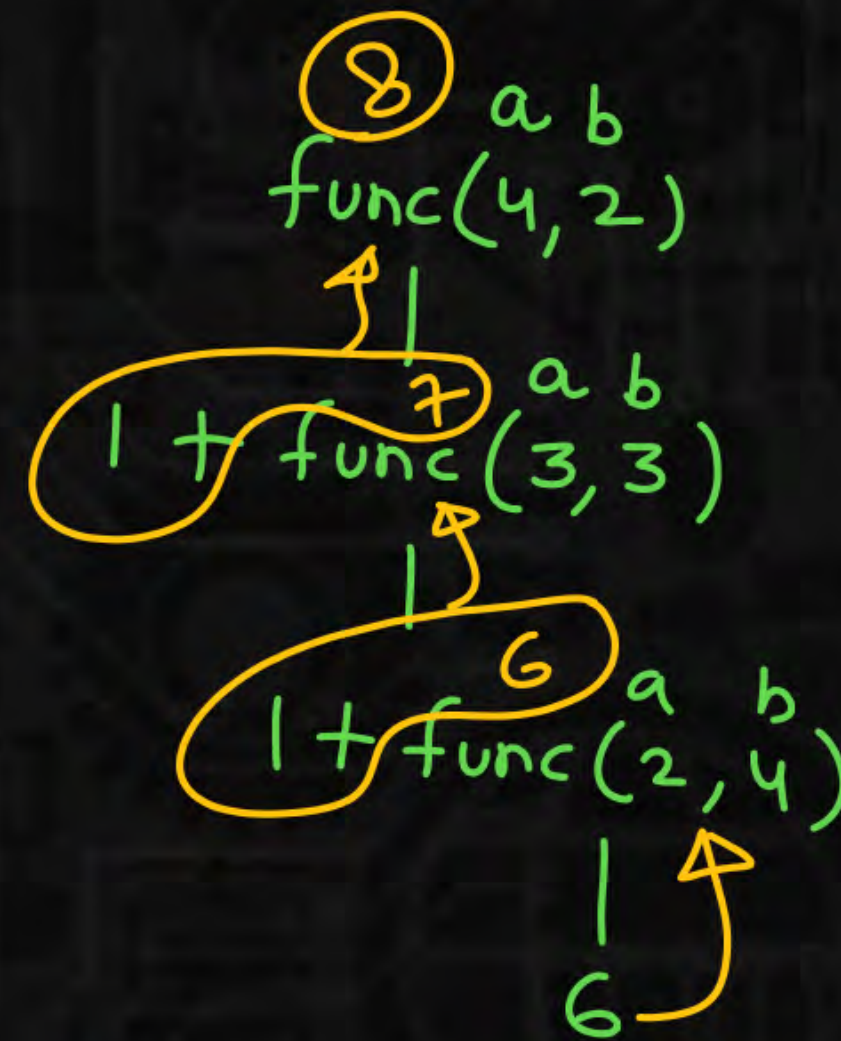
Q.4

Consider the following function:

```
int func(int a, int b)
{
    if (a < b)
        return a + b;
    else
        return 1 + func(a - 1, b + 1);
}
```

The value returned by func(4, 2) is 8.

[NAT]





Q.5

Consider the following function:

```
void arc(int n){
```

```
    if (n<=2) return;
```

```
    else{
```

```
        1. arc(n-2);
```

```
        2. printf("%d\t", n-1);
```

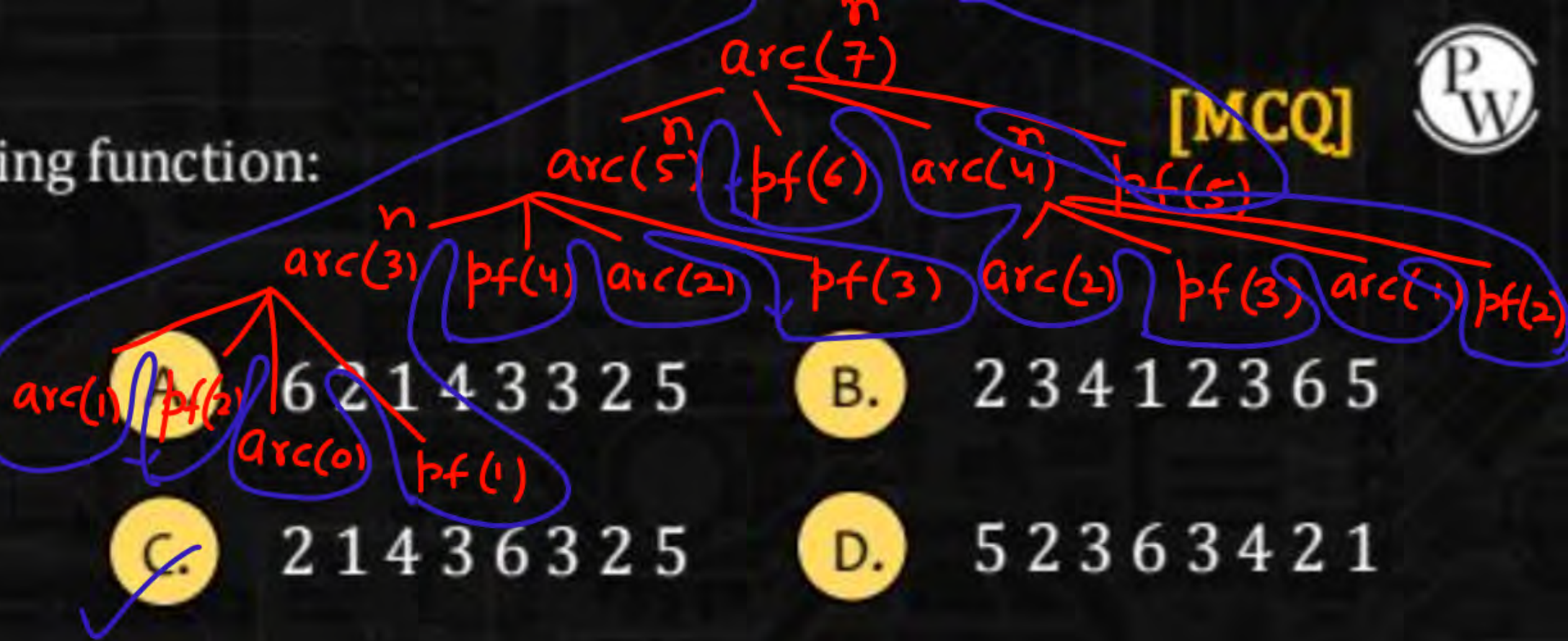
```
        3. arc(n-3);
```

```
        4. printf("%d\t", n-2);
```

```
    }
```

```
}
```

The output printed when arc(7) is called-





Q.6

[MCQ]



```
#include<stdio.h>
void print(int n){
```

```
    printf("GATE Wallah\n");
```

```
    if(n++==0) return;
```

```
    print(n++);
```

```
}
```

```
int main(){
```

```
void print();
```

```
void print();
```

```
    print(-4);
```

```
    return 0;
```

```
}
```

Which of the following is correct?

A.

Compilation error

B.

"GATE Wallah" will be printed infinite number of times.

C.

"GATE Wallah" will be printed 4 times.

D.

"GATE Wallah" will be printed 5 times.

D



Q.6

```
#include<stdio.h>
void print(int n){
```

```
1. printf("GATE Wallah\n");
```

```
2. if(n++==0) return;
```

```
3. print(n++);
   }
```

```
int main(){
```

```
void print(); dec.
```

```
void print(); dec.
```

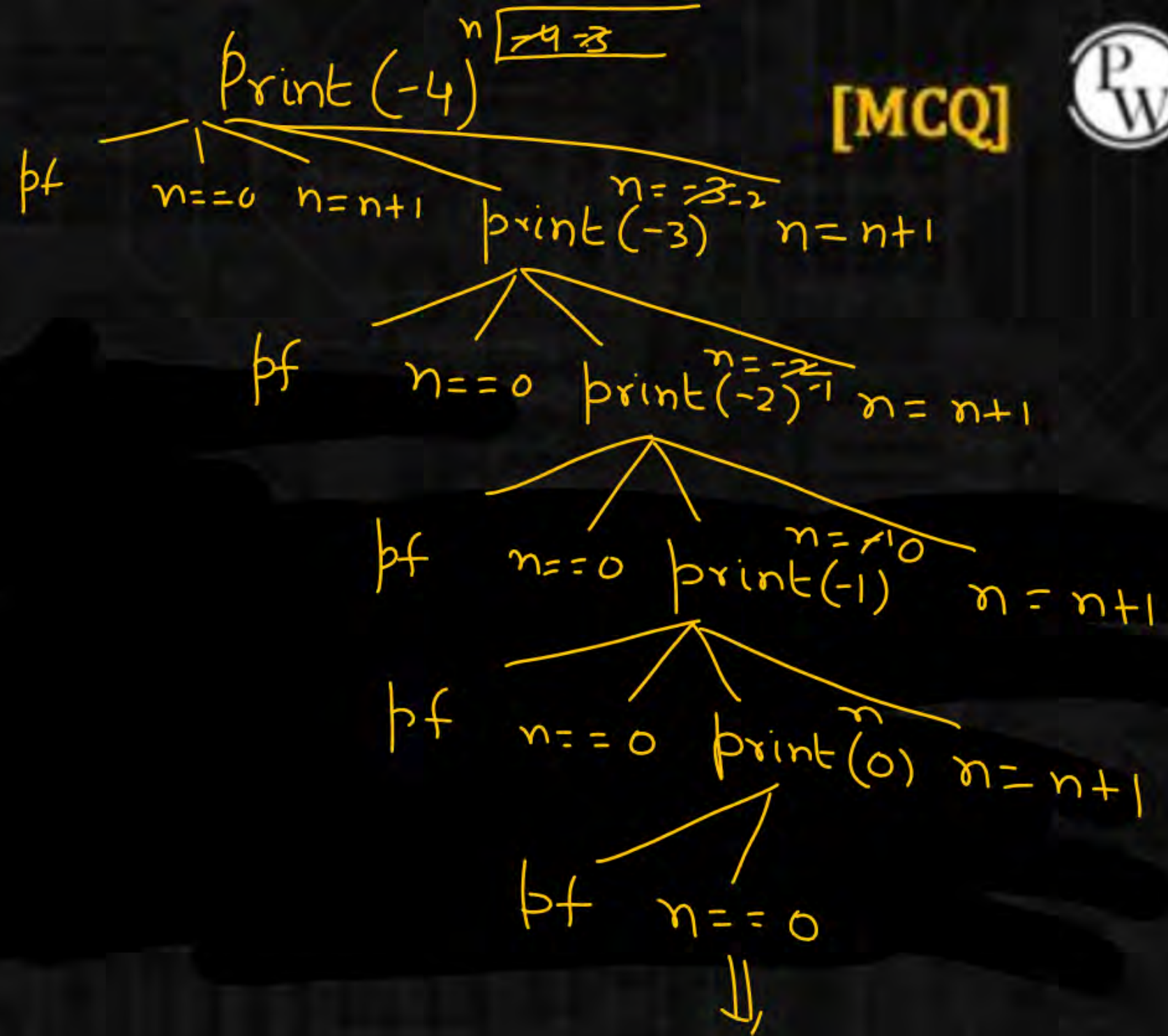
```
print(-4);
```

```
return 0;
```

```
}
```

Which of the following is correct?

[MCQ]





Q.7

[MCQ]



Consider the following program:

```
void arc()
```

```
{
```

```
    int a;
```

```
    static int b;
```

```
    1. a=b;
```

```
    2. printf("%d\t%d\t", a++, b++);
```

```
    3. if(a<=3)
```

```
        arc();
```

```
}
```

When arc() is called from main, the output is:

A.

00112233

B.

11223344

C.

01122334

D.

12233445

*local/auto* *b* [0]



Q.7

[MCQ]



Consider the following program:

```
void arc()
```

```
{
```

```
    int a;
```

```
    static int b;
```

```
    a=b;
```

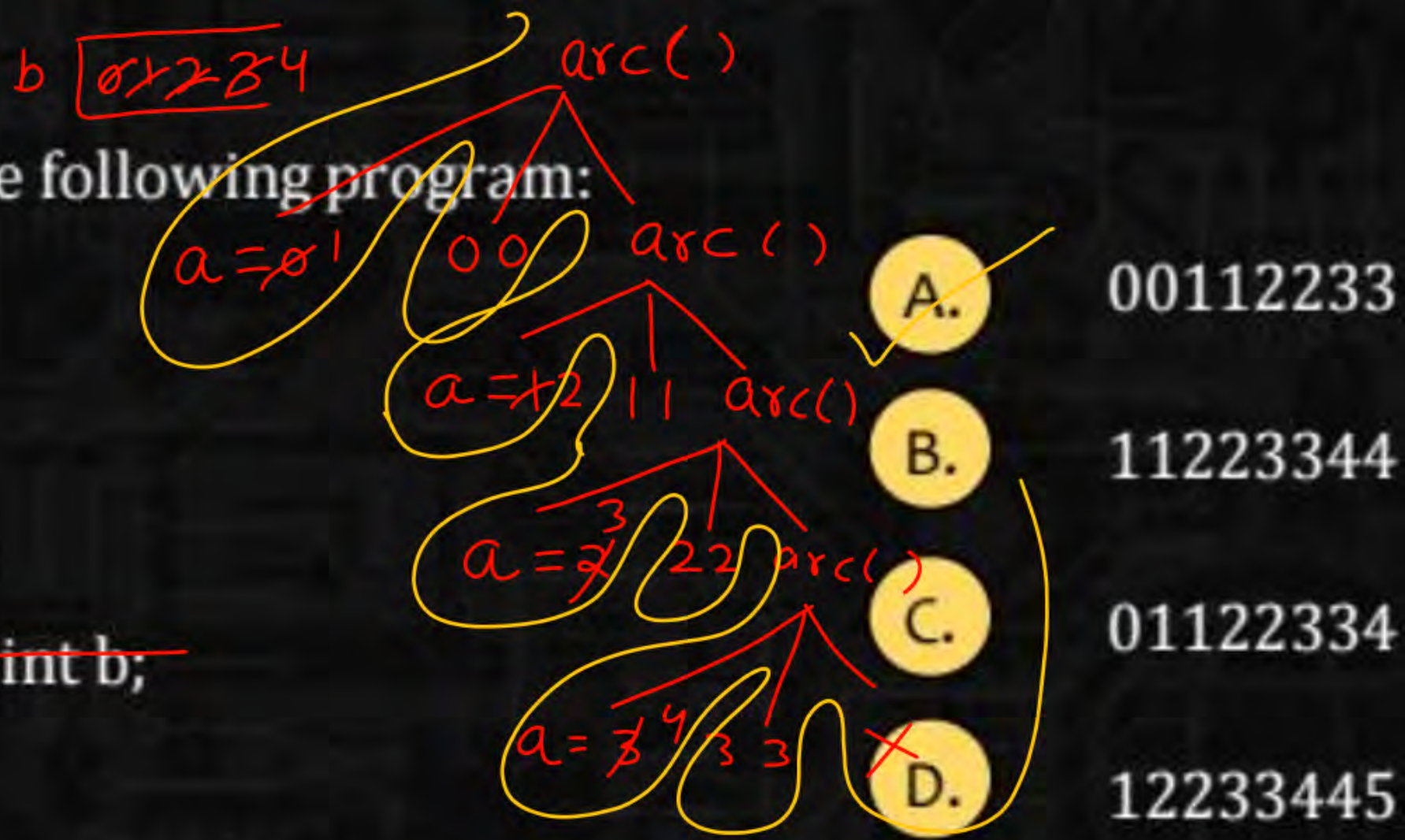
```
    printf("%d\t%d\t", a++, b++);
```

```
    if(a<=3)
```

```
        arc();
```

```
}
```

When arc() is called from main, the output is:



00112233 (A)



Q.8

Consider the following function:

```
int arc(int i, int j)
```

```
{
```

```
    if(i<2) return j+2;
```

```
    else if(j<2) return arc(i-1, 1);
```

```
    else return arc(i-1, arc(i, j-2));
```

```
}
```

The value returned by arc(2, 6) is 8

[NAT]

