

①

S20210010027
Anushthan Saxena
Set_1

$$Q1 (a) \text{rec}(5,3) = \text{rec}(4,2) + 3 \times \text{rec}(4,3)$$

$$\text{rec}(4,2) = \text{rec}(3,1) + 2 \times \text{rec}(3,2)$$

$$\underline{\text{rec}(3,1) = 1} \quad , \quad \text{rec}(3,2) = \text{rec}(2,1) + 2 \times \text{rec}(2,2)$$

$$\underline{\text{rec}(2,1) = \text{rec}(2,1) = 1}$$

$$\Rightarrow \underline{\text{rec}(3,2) = 3}$$

$$\Rightarrow \text{rec}(4,2) = 1 + 2(1 + 2 \times 1) = \underline{7}$$

$$\text{rec}(4,3) = \text{rec}(3,2) + 3 \times \text{rec}(3,3)$$

$$\underline{\text{rec}(3,3) = 1} \quad , \quad \underline{\text{rec}(3,2) = 3}$$

$$\underline{\text{rec}(4,3)} = \cancel{\text{rec}(3,2)} + 3 + 3 = \underline{6}$$

$$\Rightarrow \text{rec}(5,3) = 7 + 3 \times 6 = \boxed{25}$$

②

S20210010027

Anushthan Saxena

Sel - 1

Q1 (b) 10 recursive calls

(c) 5 multiplications

(d)

3

820210010027

Anushthan Saxena

Set-1

Q2(a)

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

```
int main ()
```

```
{ int row, col;
```

```
    printf("Enter number of rows: ");
```

```
    scanf("%d", &row);
```

```
    printf("Enter number of columns: ");
```

```
    scanf("%d", &col);
```

```
    printf("Enter array entries: ");
```

```
    for (int i=0; i<row; i++)
```

```
    { for (int j=0, j<col; j++)
```

```
    {
```

```
int arr[row][col];
```

```
long sum=0;
```


(4)

820210010024

Anushthan Saxena

Set - 1

```
printf("Enter array entries: ");  
for (int i=0; i<row; i++)  
{  
    for (int j=0; j<col; j++)  
    {  
        ax scanf("%d", &arr[i][j]);  
    }  
}
```

```
for (int i=0; i<row; i++)  
{  
    for (int j=0; j<col; j++)  
    {  
        if (i==j) sum += arr[i][j];  
    }  
}
```

```
printf("Sum of diagonal elements = %d", sum);
```

```
return 0;
```

```
}
```


Q2 (b)

Q. fseek(file pointer, long offset, int start)

Changes position of a file pointer with the described arguments.

Offset is the current position of pointer,
start is the place where we want to place the pointer.

Eg → ~~File~~ FILE * fptr;

fptr = fopen("Example.txt", "r+");

~~fseek(fptr, 0, SEEK_END);~~fseek(fptr, 0, 10); // Will set pointer
// position at 10

(6)

S20210010027

Arushthan Saxena

Set-1

Q.25(b)

B. ftell(fptr)

Tells the current location of the file pointer in the opened file.

Eg → FILE *fptr;

fptr = fopen("One.txt", "r+");

long ~~int~~ index = ftell(fptr); // index = 0

C. rewind(fptr)

Places pointer back to the start of file.

Eg → FILE *fptr;

fptr = fopen("One.txt", "r+");

char ch;

while ((ch = fgetc(fptr)) != EOF)
{ printf("%c", ch); }

rewind(fptr);

Q2 (8)

Ex d. feof (fptr)

Returns a non-zero value when
EOF is reached.

Ex - `if (feof (fptr))
printf ("Reached end of file");`

Q3 ~~(a)~~ A \rightarrow (a) ~~n~~
(b) $f(a+1, n-1)$

B \rightarrow C from dennis ritchie book

~~(c)~~ C \rightarrow ~~USA~~ VRB

D \rightarrow Delhi^o Delhi^o Delhi^o

F \rightarrow IIT Sri City

IIIT Raipur

IIIT Raipur

F \rightarrow bus

a

3

adsa