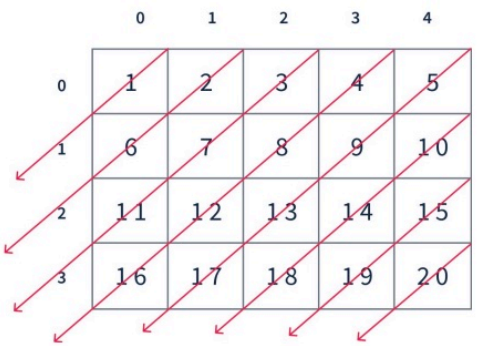
Approach / Rough Work

2D Matrices / In Class

(Introduction to Problem Solving - II)

< Question > : Given arr[N][M]. Print all the elements diagonally from right to left.

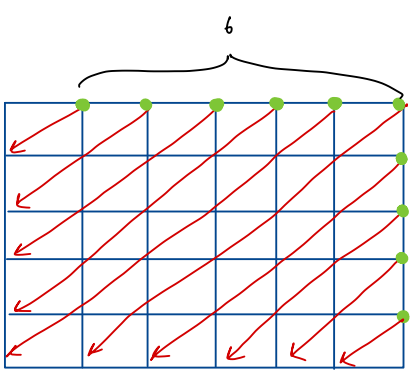
- arr [4] [5] →



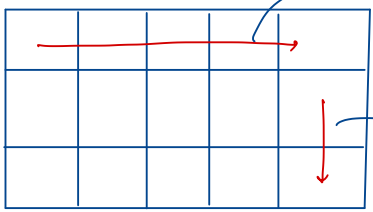
Expected output:

1
2, 6
3, 7, 11
4, 8, 12, 16
5, 9, 13, 17
10, 14, 18
15, 19
20

⇒ For a matrix A[N][M], the total number of diagonals = M + (N-1)

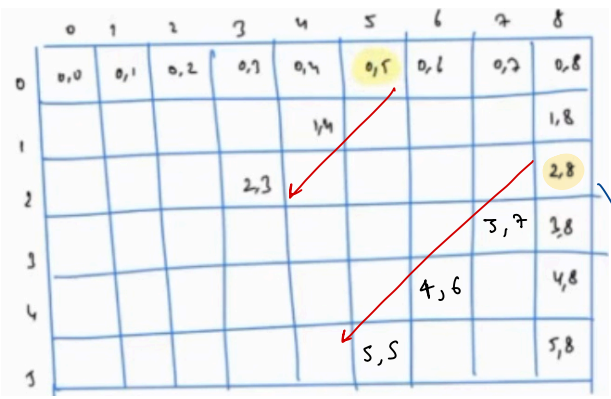


⇒ Basically the 'highlighted' end points



Basically all the diagonals are starting from 0^{th} row

these diagonals are starting from last column



for each element in the 0^{th} row go on printing it's diagonals by incrementing row-index and decrementing column-index

same for each element in the last column as well

Iteration Logic

// first loop from index 0 → (M-1) → 0^{th} Row

```
for(int i = 0; i < M; i++) {
    int startIndex = 0, endIndex = i;
    while ( startIndex < N) {
        print ( A[startIndex][endIndex];
        startIndex ++;
        endIndex --;
    }
}
```

// second loop from index 1 → N → Last Column

```
for (int i = 1; i < N; i++) {
    int startIndex = i, endIndex = M-1;
    while (startIndex < N) {
        print (A[startIndex][endIndex];
        startIndex ++;
        endIndex --;
    }
}
```