23/07/2020

* Space pattern

Q.1)

```
         *
      *  *
   *  *  *
*  *  *  *
```

```
#include<stdio.h>
void main () {
        for ( int row = 1 ; row <= 4 ; row ++) {
                for (int space = 3; space>=row ; space --) {
                    printf("   ");
                }
                 for ( int col = 1 ; col<=row ;col ++) {
                        printf(" *   ");
                    }
                printf("\n");
            }
    }
```

i-row, k-space, j-col

- Dry Run

i	k	j	i<=4	k>=i	pf(" ")	j<=i	pf(*)	k--	j+1	i++
1	3	1	✓	✓	✓	✓	*	2	2	
	2	2		✓	✓	X	-	1		
	1			✓	✓			0		
	0			X						2
2	3	1.	✓	✓	✓	✓	*	2	2	
	2	2		✓	✓	✓	*	1	3	
	1	3		X		X				3
3	3	1	✓	✓	✓	✓	*	2	2	
	2	2		X		✓	*		3	
		3				✓	*		4	
		4				X				4
4	3	1	✓	X		✓	*		2	
		2				✓	*		3	
		3				✓	*		4	
		4				✓	*		5	
		5				X				5
5			X							

Q

```
- - - 1
- - 1 2
- 1 2 3
1 2 3 4
```

```
#include<stdio.h>
void main () {
        for (int i= 1 ; i<=4 ; i++){
                for ( int k=3 ; k>=i ; k--){
                    ~~for ( int j=1 ; j<=i ; j++) {~~
                        printf(" ");
                }
             for( int j =1 ; j<=i; j++){
                    printf(" %d",j);
             }
```

- Dry Run

variables			Conditions		statements			incre/decr		
i	k	j	i<=4	k>=i	pf(" ")	j<=i	pf("%d",j)	j++	k--	i++
1	3	1	✓	✓	✓	✓	1	2	2	
	2	2		✓	✓	✗			1	
	1			✓	✓				0	
	0			✗						2
2	3	1	✓	✓	✓	✓	1	2	2	
	2	2		✓	✓	✓	2	3	1	
	1	3		✗	✗					3

p	k	j	p<=4	~~k>=i~~	~~j<=i~~	k>=p	pf(" ")	j<=p	pf(j)	k--	j++	p++
3	3	1	✓	la		✓	✓	✓	1	2	2	
	2	2				✗		✓	2		3	
		3						✓	3		4	
		4						✗				4
4	3	1	✓			✗		✓	1		2	
		2						✓	2		3	
		3						✓	3		4	
		4						✓	4		5	
		5						✗				5
5			✗									

Q

```
      D
    D C
  D C B
D C B A
```

```
#include<stdio.h>
void main () {
        for (int i=1 ; i<=4 ; i++) {
            char ch = 'D' ;
            for ( int k= 3 ; k >=i ; k --) {
                printf("  ");
            }
             for ( int j=1 ; j<=i ; j++) {
                  printf(" %c ", ch);
                   ch --;
             }
             ch++;
             printf ("\n");
      }
```

- Dry Run

variables				conditions			statements		incr/decr		
ch	i	k	j	i<=4	k>=i	pf(" ")	jk=i	pf("ch")	~~[illegible]~~- k=j-i		
D	1	3	1	✓	✓	✓	✓	D	2	2	
		2	2		✓	✓	✗		1		
		1			✓	✓			0		
		0			✗						
											2
D	2	3	1	✓	✓	✓	✓	D	2	2	
C		2	2		✓	✓	✓	C	1	3	
		1	3		✗	✗	✗				3
D	3	3	1	✓	✓	✓		D	2	2	
C		2	2		✗	~~[illegible]~~	✓	C		3	
B			3				✓	B		4	
A			4				✗				4
D	4	3	1	✓	✗		✓	D		2	
C			2				✓	C		3	
B			3				✓	B		4	
A			4				✓	A		5	
			5				✗				5
	5			✗							