Q.1),

	1	2	3	4	5
1	A	B	C	D	E
2	F	G	H	I	
3	J	K	L		
4	M	N			
5	O				

```
#include <stdio.h>
void main () {
    char ch = 'A';
    int i=1;
    while ( i<=5 ){
        int j =5;
        while (j>=i){
            printf ("%c ", ch);
            ch++;
            j--;
        }
        printf ("\n");
        i++;
    }
}
```

variables			conditions		statements	incr/decre		
ch	i	j	i<=5	j>=i	printf("%c", ch);	ch++	j--	i++
A	1	5	1<=5	5>=1	A	B	4	
B		4		4>=1	B	C	3	
C		3		3>=1	C	D	2	
D		2		2>=1	D	E	1	
E		1		1>=1	E	F	0	
		0		0>=1 X				2
F	2	5	2<=5	5>=2	F	G	4	
G		4		4>=2	G	H	3	
H		3		3>=2	H	I	2	
I		2		2>=2	I	J	1	
		1		1>=2 X				3
J	3	5	3<=5	5>=3	J	K	4	
K		4		4>=3	K	L	3	
L		3		3>=3	L	M	2	
		2		2>=3 X				4
M	4	5	4<=5	5>=4	M	N	4	
N		4		4>=4	N	O	3	
		3		3>=4 X				5
O	5	5	5<=5	5>=5	O	P	4	
P		4		4>=5 X				6
	6		6<=5 X					

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Q.2)

A	2	C	4	E
F	7	H	9	
J	11	L		
M	14			
O				

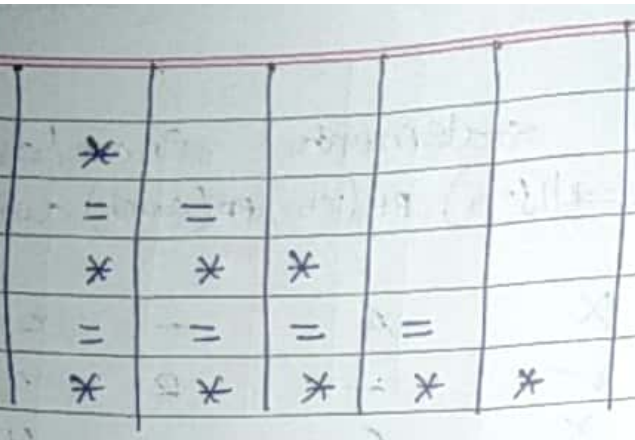
```
#include <stdio.h>
void main (){
        int i=1;
        char ch = 'A';
        int count=1;
        while (i<=5) {
                int j = 5;
                while (j >= i) {
                        if (j==2 || j==4){
                                printf("%d ", count);
                        }else {
                                printf("%c ", ch);
                        }
                        count++;
                        ch++;
                        j--;
                }
                printf("\n");
                i++;
        }
}
```

classmate
Date
Page

• Dry Run

	variables		conditions			statements		incre/decre			
	i	ch	count	j	(i<=5)	(j>=i)	if(j==2||j==4)	pf(ch)	pf(count)	count++	ch++ j--
1	A	1	5		✓	✓	X	A	-	2	B 4
	B	2	4			✓	✓		2	3	C 3
	C	3	3			✓	X	C	-	4	D 2
	D	4	2			✓	✓		4	5	E 1
	E	5	1			✓	X	E		6	F 0
			0			X					2
2											
2	F	6	5		✓	✓	X	F	-	7	G 4
	G	7	4			✓	✓		7	8	H 3
	H	8	3			✓	X	H	-	9	I 2
	I	9	2			✓	✓		9	10	J 1
			1			X					3
3	J	10	5		✓	✓	X	J	-	11	K 4
	K	11	4			✓	✓		11	12	L 3
	L	12	3			✓	X	L	-	13	M 2
			2			X					4
4	M	13	5		✓	✓	X	M	-	14	N 4
	N	14	4			✓	✓		14	15	O 3
			3			X					5
5	O	15	5		✓	✓	X	O	-	16	P 4
			4			X					6
6					X						

Q.3




```
# Include <stdio.h>
void main () {
        int i = 1;
        while (i <= 5) {
            int j = 1;
            while (j <= i) {
                if (i == 2 || i == 4) {
                    printf ("= ");
                } else {
                    printf ("* ");
                }
                j++;
            }
            i++;
            printf ("\n");
        }
    }
```

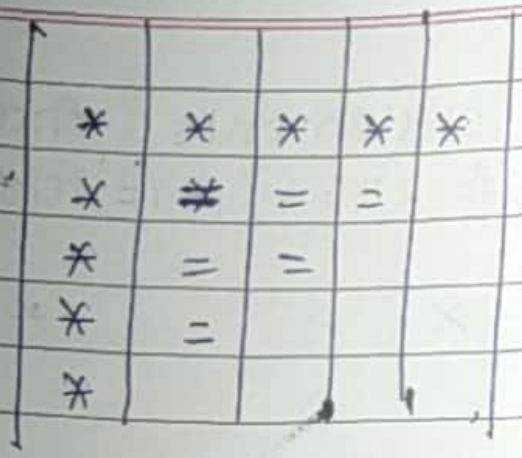
classmate

Date ______
Page ______

- Dry Run

variables		conditions		statements			incre / decre	
i	j	i<=5	j<=i	if(i==2 || i==4)	if(=)	if(*)	j++	i++
1	1	✓	✓	✗		*	2	
	2		✗					2
2	1	✓	✓	✓	=		2	
	2		✓	✓	=		3	
	3		✗					3
3	1	✓	✓	✗		*	2	
	2		✓	✗		*	3	
	3		✓	✗		*	4	
	4		✗					4
4	1	✓	✓	✓	=		2	
	2		✓	✓	=		3	
	3		✓	✓	=		4	
	4		✓	✓	=		5	
	5		✗					5
5	1	✓	✓	✗		*	2	
	2		✓	✗		*	3	
	3		✓	✗		*	4	
	4		✓	✗		*	5	
	5		✓	✗		*	6	
	6		✗					6
6		✗						

4)




```
#include<stdio.h>
void main (){
        int i=1;
        while(i<=5){
            int j=5;
            while(j>=i){
                if(i==1 || j==5){
                    printf("* ");
                }else{
                    printf("= ");
                }
                j--;
            }
            i++;
            printf("\n");
        }
}
```

Dry Run

variables		conditions			statements		incre/decre
i	j	i<=5	j>=i	if(i==1 || j==5)	if(*)	if(=)	j-- if
1	5	✓	✓	✓	*	4	
	4		✓	✓	*	3	
	3		✓	✓	*	2	
	2		✓	✓	*	1	
	1		✓	✓	*	0	
	0		X				2
2	5	✓	✓	✓	*	4	
	4		✓	X	=	3	
	3		✓	X	=	2	
	2		✓	X	=	1	
	1		X				3
3	5	✓	✓	✓	*	4	
	4		✓	X	=	3	
	3		✓	X	=	2	
	2		X				4
4	5	✓	✓	✓	*	4	
	4		✓	X	=	3	
	3		X				5
5	5	✓	✓	✓	*	4	
	4		X				6
6		X					