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## Assignment-8

① i

| | j 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | * | | | | |
| 2 | * | * | | | |
| 3 | * | * | * | | |
| 4 | * | * | * | * | |
| 5 | * | * | * | * | * |

```
#include <stdio.h>
    int main()
    {
    int i, j, row, column;
    printf("enter row and column");
    scanf("%d %d", &row, &column);
    for(i=1; i<=row; i++)
        {
    for(j=1; j<=column; j++)
        {
    if(j<=i)
    printf("*");
    else
    printf(" ");
    }
    printf("\n");
    }
    return 0;
    }
```

row i — column j

| i | j |
|---|---|
| 1 | 1 |
| 2 | 1 2 |
| 3 | 1 2 3 |
| 4 | 1 2 3 4 |
| 5 | 1 2 3 4 5 |

| i | j |
|---|---|
| 1 | j<=1 |
| 2 | |
| 3 | |
| 4 | j<=4 |
| 5 | |

i=1 ; i<=5

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(2)

| i \ j | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | | | | | * |
| 2 | | | | * | * |
| 3 | | | * | * | * |
| 4 | | * | * | * | * |
| 5 | * | * | * | * | * |

| i | j |
|---|---|
| 1 | 5 |
| 2 | 4 5 |
| 3 | 3 4 5 |
| 4 | 2 3 4 5 |
| 5 | 1 2 3 4 5 |

```
#include <stdio.h>
 int main()
  {
int i, j, row, column;
printf(" Enter row and column\n");
scanf("%d %d", &row, &column);
for(i=1; i<=row; i++)
  {
for(j=1; j<=column; j++)
  {
if (j>=(column+1)-i
  printf("*");

else
 printf(" ");
}

printf("\n");

}

return 0;
 }
```

| i | j |
|---|---|
| 1 | j >= 5 |
| 2 | j >= 4 |
| 3 | j >= 3 |
| 4 | j >= 2 |
| 5 | j >= 1 |

i ~ j  j >= 6 - i

③

| i= | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | * | * | * | * | * |
| 2 | * | * | * | * | |
| 3 | * | * | * | | |
| 4 | * | * | | | |
| 5 | * | | | | |

| i | j |
|---|---|
| 1 | 1 2 3 4 5 |
| 2 | 1 2 3 4 |
| 3 | 1 2 3 |
| 4 | 1 2 |
| 5 | 1 |

| i | j |
|---|---|
| 1 | j <= 6-1 |
| 2 | j <= 6-2 |
| 3 | j <= 6-3 |
| 4 | j <= 6-4 |
| 5 | j <= 6-5 |

```
# include <stdio.h>
int main()
{
int i, j, row, column;
printf(" Enter row and column\n");
scanf("%d %d", &row, &column);
for(i=1; i<= row ; i++)
  {
for(j=1 ; j<= column ; j++)
    {
if( j <= (column+1)-i)
    printf(" * ");
else
    printf(" ");
    }
printf("\n");
}
return 0;
}
```

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| i= | j=1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | * | * | * | * | * |
| 2 | | * | * | * | * |
| 3 | | | * | * | * |
| 4 | | | | * | * |
| 5 | | | | | * |

| i | j |
|---|---|
| 1 | 1 2 3 4 5 |
| 2 | 2 3 4 5 |
| 3 | 3 4 5 |
| 4 | 4 5 |
| 5 | 5 |

| i | j |
|---|---|
| 1 | $j \geq 1$ |
| 2 | $j >= 2$ |
| 3 | $j >= 3$ |
| 4 | $j >= 4$ |
| 5 | $j \geq 5$ |

```
# include <stdio.h>.
    int main()
      {
int i, j, row, column;
printf("Enter row and column\n");
scanf("%d %d", &row, &column);
for (i=1 ; i<=row ; i++)
      {
for (j=1 ; j<=column ; j++)
      {
if (j>=i)
printf("*");
else
printf(" ");
      }
printf("\n");
      }
return 0;
}
```

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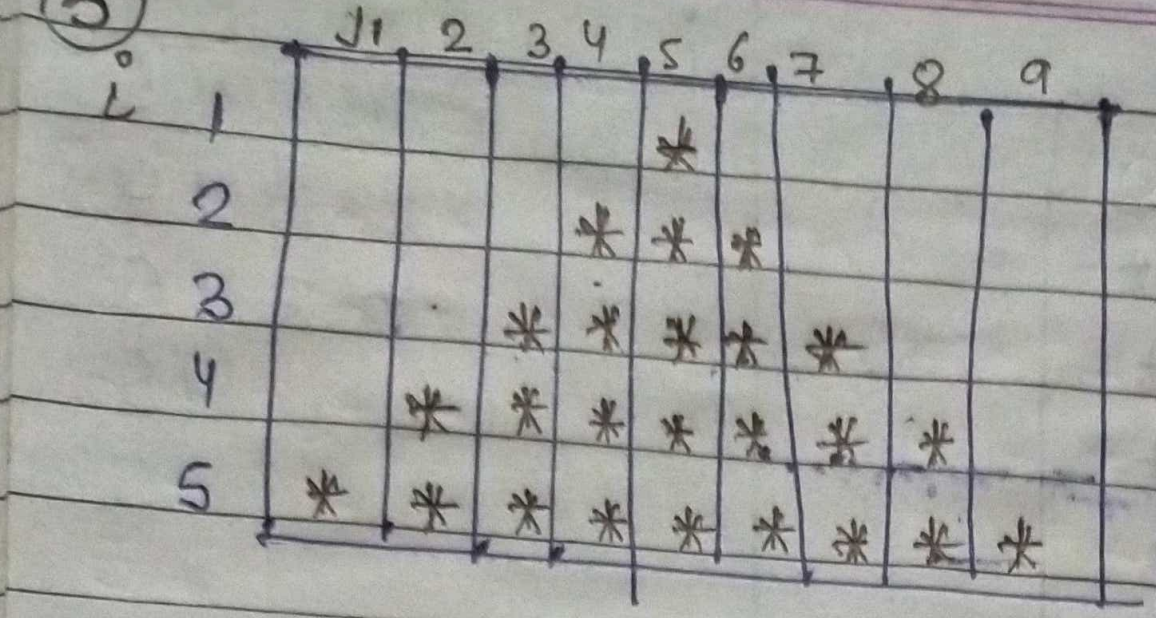
(5)



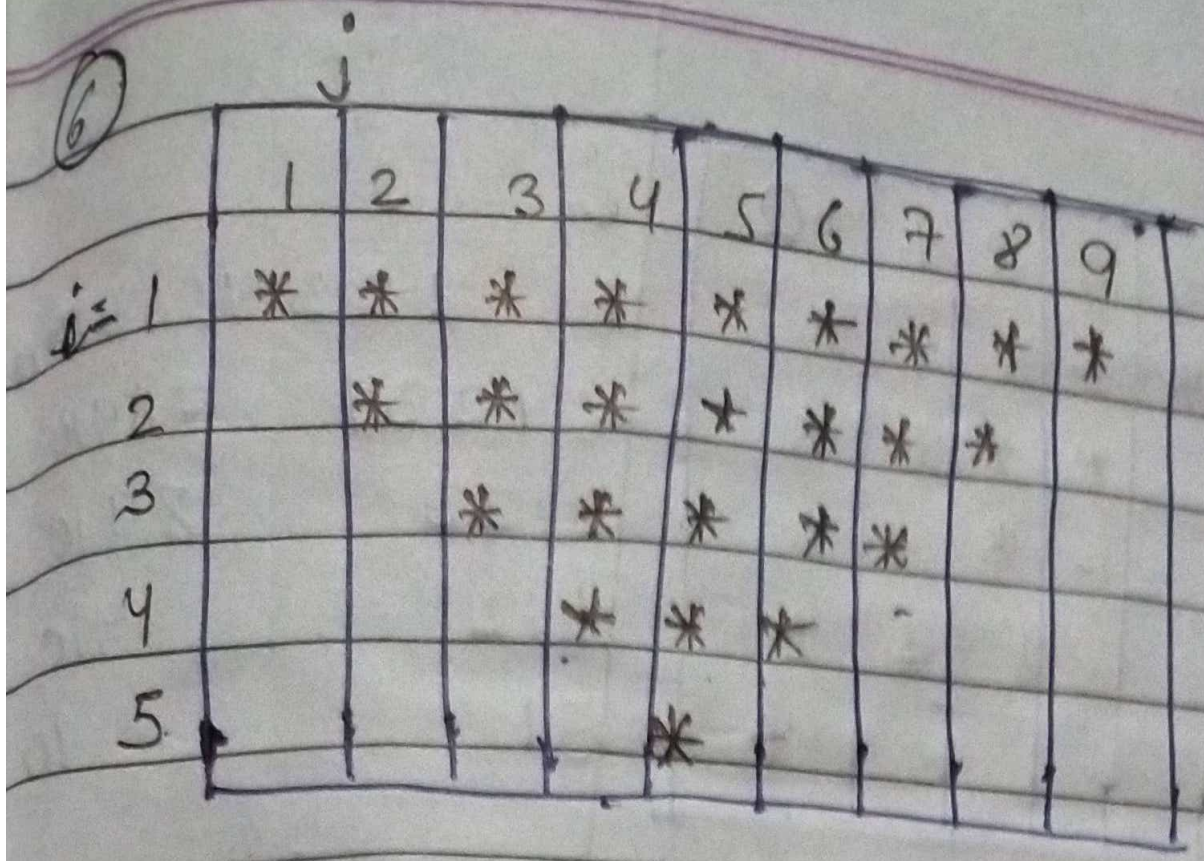

```
#include<stdio.h>
int main()
{
int i, j, row, column;
printf("Enter row and column\n");
scanf("%d%d", &row, &column);
for(i=1; i<=row; i++)
  {
for(j=1; j<=column; j++)
  {
if( j<=((column+1)/2)-i || j>=((column+1)/2)+i )
  printf(" ");
else
  printf("*");
  }
printf("\n");
  }
return 0;
}
```

| i | j |
|---|---|
| 1 | 5 |
| 2 | 4 5 6 |
| 3 | 3 4 5 6 7 |
| 4 | 2 3 4 5 6 7 8 |
| 5 | 1 2 3 4 5 6 7 8 9 |

| i | j |
|---|---|
| 1 | j<=5-1 \|\| j>=5+1 |
| 2 | j<=5-2 \|\| j>=5+2 |
| 3 | j<=5-3 \|\| j>=5+3 |
| 4 | j<=5-4 \|\| j>=5+4 |
| 5 | j<=5-5 \|\| j>=5+5 |

j<=5-i || j>=5+i

(6)




| i | j |
|---|---|
| 1 | 1 2 3 4 5 6 7 8 9 |
| 2 | 2 3 4 5 6 7 8 |
| 3 | 3 4 5 6 7 |
| 4 | 4 5 6 |
| 5 | 5 |

| i | j |
|---|---|
| L | j >= i && j <= 10-i |

```
#include <stdio.h>
  int main()
  {
int i, j, row, column;
printf("Enter row and column\n");
scanf("%d %d", &row, &column);
for(i=1; i<=row; i++)
  {
for(j=1; j<=column; j++)
  {
if( j >= i && j <= (column+1)-i ) {
      printf("*");
else
  printf(" ");
  }
printf("\n");
}
return 0;
  }
```

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(3)

| i\j | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| i=1 | * | * | * | * | * | * | * | * | * | * |
| 2 | * | * | * | * | | | * | * | * | * |
| 3 | * | * | * | | | | | * | * | * |
| 4 | * | * | | | | | | | * | * |
| 5 | * | | | | | | | | | * |

| i | j |
|---|---|
| 1 | 1 2 3 4 5 6 7 8 9 10 |
| 2 | 1 2 3 4 7 8 9 10 |
| 3 | 1 2 3 8 9 10 |
| 4 | 1 2 9 10 |
| 5 | 1 10 |

| i | j |
|---|---|
| 1 | j <= 5 \|\| j >= 6 |
| 2 | j <= 4 \|\| j >= 7 |
| 3 | j <= 3 \|\| j >= 8 |
| 4 | j <= 2 \|\| j >= 9 |
| 5 | j <= 1 \|\| j >= 10 |
| | j >= 6-i \|\| j <= 5+i |

```
#include <stdio.h>
int main()
{
int i, j, row, column;
printf("Enter row and column\n");
scanf("%d%d", &row, &column);
for(i=1; i<=row; i++)
{
for(j=1; j<=column; j++)
{
if( j <= (column/2+1-i) || j >= (column/2+i))
printf("*");
else
printf(" ");
}
printf("\n");
}
return 0;
}
```

(8)

| i \ j | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| i=1 | | | | 1 | | | |
| 2 | | | 1 | 2 | 1 | | |
| 3 | 1 | 2 | 3 | 2 | 1 | | |
| 4 | 1 | 2 | 3 | 4 | 3 | 2 | 1 |

| i | j |
|---|---|
| 1 | 4 |
| 2 | 3 4 5 |
| 3 | 2 3 4 5 6 |
| 4 | 1 2 3 4 5 6 7 |

| i | j |
|---|---|
| 1 | j >= 4 && j <= 4 |
| 2 | j >= 3 && j <= 5 |
| 3 | j >= 2 && j <= 6 |
| 4 | j >= 1 && j <= 7 |

j >= 5 - i && j <= 3 + i

```
#include<stdio.h>
int main()
{
int i, j, row, column, k;
printf("Enter row and column\n");
scanf("%d %d", &row, &column);
for(i=1; i<=row; i++)
{
k=1;
for(j=1; j<=column; j++)
{
if(j>=((column+1)/2+1-i) && j<=((column+1)/2-1+i))
{
if(j==((column+1)/2) || j>=((column+1)/2+i))
{
printf("%d", k);
k--;
}
else
{
printf("%d", k);
k++;
}
```

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```
else
  printf(" ");
 }
printf("\n");
 }
return 0;
}
```

⑨

```
        j
    1 2 3 4 5 6 7
i   1 2 3 2 1
      1 2 1
```

| 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| i=1 | 1 | 2 | 3 | 4 | 3 | 2 | 1 |
| 2 | | 2 | 2 | 3 | 2 | 1 | |
| 3 | | | 1 | 2 | 1 | | |
| 4 | | | | 1 | | | |

```
i    j
1    1 2 3 4 5 6 7
2      2 3 4 5 6
3        3 4 5
4          4
```

4-2 4+2

4-1 4+1

7-(i-1)

7-i+1

8-1

8+2

j>=i && j<=8-i

```
i    j
1    j>=1 && j<=7
2    j>=2 && j<=6
3    j>=3 && j<=5
4    j>=4 && j<=4
```

```
#include<stdio.h>
int main()
{
int i, j, row, column, k;
printf("Enter row and column\n");
scanf("%d%d", &row, &column);
for(i=1; i<=row; i++)
{
k=1;
for(j=1; j<=column; j++)
{
if(j>=i && j<=(column+1-i))
{
if(j==(column+1)/2 || j>=(column+1)/2+1)
{
printf("%d", k);
k--;
}
else
{
printf("%d", k);
k++;
}
}
else
printf(" ");
}
printf("\n");
}
```

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(10)

| | j | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| i = 1 | 1 | 2 | 3 | 4 | 3 | 2 | 1 |
| 2 | 1 | 2 | 3 | | 3 | 2 | 1 |
| 3 | 1 | 2 | | | | 2 | 1 |
| 4 | 1 | | | | | | 1 |

| i | j |
|---|---|
| 1 | 1 2 3 4 5 6 7 |
| 2 | 1 2 3 6 7 |
| 3 | 1 2 6 7 |
| 4 | 1 1 |

```
#include <stdio.h>
int main()
{
  int row, column, i, j, k, d=0;
printf(" Enter row and column");
scanf("%d%d", &row, &column);
for(i=1; i<=row; i++)
   {
      k=1;
for(j=1; j<=column; j++)
   {
if(j<=(column+1)/2+1-i || j>=(column+1)/2-1+i)
      {
if(j>=(column+1)/2-1+i)
   {
printf("%d", k);
      k--;
      d=j;
   }
}
```

```
else
{
printf("%d", k);
k++;
d=j;
}
}
else
{
if(d+1==j)
k++;
printf(" ");
}
}
printf("\n");
}
return 0;
}
```

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

row = 4, column = 7

i=1

k=1 2 3 4 5 6 10

j=1 2 3 4 5 6 7

1<=7

j<=5-i || j>=3+i

d=1 2 3 4 5 6 7

2<=7

i=2

k=1 2 3 4 5 6 10

j=1 2 3 4 5 6 7

d=1 2 3 5 6 7

i=3

k=1 2 3 2 1

j=1 2 3 4 5 6 7

d=1 2 6

3+1

i=4

k=1 2 1

j=1

d=2<=4

2>=3+4

j=7

7>=7

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11)

| i \ j | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | A | | | | |
| 2 | | | | A | B | A | | | |
| 3 | | | A | B | C | B | A | | |
| 4 | | A | B | C | D | C | B | A | |
| 5 | A | B | C | D | E | D | C | B | A |

| i | j |
|---|---|
| 1 | 5 |
| 2 | 4 5 6 |
| 3 | 3 4 5 6 7 |
| 4 | 2 3 4 5 6 7 8 |
| 5 | 1 2 3 4 5 6 7 8 9 |

```
#include <stdio.h>
int main()
{
int i, j, row, column;
char A;
printf("Enter number of rows and columns");
scanf("%d%d", &row, &column);
printf("%d %d\n", row, column);
for(i=1; i<=row; i++)
    {
    A='A';
for(j=1; j<=column; j++)
    {
if(j>=(column+1)/2+1-i && j<=(column+1)/2-1+i)
    {
if(j==(column+1)/2 || j>=(column+1)/2+1)
    {
printf("%c", A);
    A--;
}
```

```
else
{
printf("%c", A);
  A++;

}

}

else
printf(" ");

}
printf("\n");

}

return 0;

}
```

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(12)

| | j | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| i= | 1 | A | B | C | D | C | B | A |
| | 2 | | A | B | C | B | A | |
| | 3 | | | A | B | A | | |
| | 4 | | | | A | | | |

| i | j |
|---|---|
| 1 | 1 2 3 4 5 6 7 |
| 2 | 2 3 4 5 6 |
| 3 | 3 4 5 |
| 4 | 4 |

| i | j |
|---|---|
| 1 | j>=1 && j<=7 |
| 2 | j>=2 && j<=6 |
| 3 | j>=3 && j<=5 |
| 4 | j>=4 && j<=4 |

j>=i && j<=column+1-i

```
#include<stdio.h>
int main()
{
int i, j, column, row;
char A;
printf("Enter row and column");
scanf("%d %d", &row, &column);
printf("%d %d\n", row, column);
for(i=1; i<=row; i++)
    {
    A='A';
for(j=1; j<=column; j++)
    {

if( j>=i && j<=column+1-i)
    {
if( j==(column+1)/2 || j>=(column+1)/2+1)
    {
printf("%c", A);
    A--;
    }
```

```
else
{
printf("%d", A);
A++;
}
}
else
printf("  ");
}
printf("\n");
}
return 0;
}
```

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(13)

| | j | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1 | A | B | C | D | E | F | G | F | E | D | C | B | A |
| 2 | A | B | C | D | E | F | | F | E | D | C | B | A |
| 3 | A | B | C | D | E | | | | E | D | C | B | A |
| 4 | A | B | C | D | | | | | | D | C | B | A |
| 5 | A | B | C | | | | | | | | C | B | A |
| 6 | A | B | | | | | | | | | | B | A |
| 7 | A | | | | | | | | | | | | A |

```
#include <stdio.h>
int main()
  {
int i, j, row, column, d=0;
char A;
printf("Enter row and column");
scanf("%d %d", row, column);
printf("%d %d\n", row, column);
for(i=1; i<=row; i++)
  {
  A='A';
for(j=1; j<=column; j++)
  {

if(j<=(column+1)/2+1-i || j>=(column+1)/2-1+i)
        {
  if(j>=(column+1)/2-1+i)
        {
          printf("%c ", A);
            A--;
        d=j;
```

```
else
{
printf("%c", A);
    A++;
d=j;
}
}
else
{
if(d+1==j)
    A--;
printf(" ");
}
}
printf("\n");
}
return 0;
}
```

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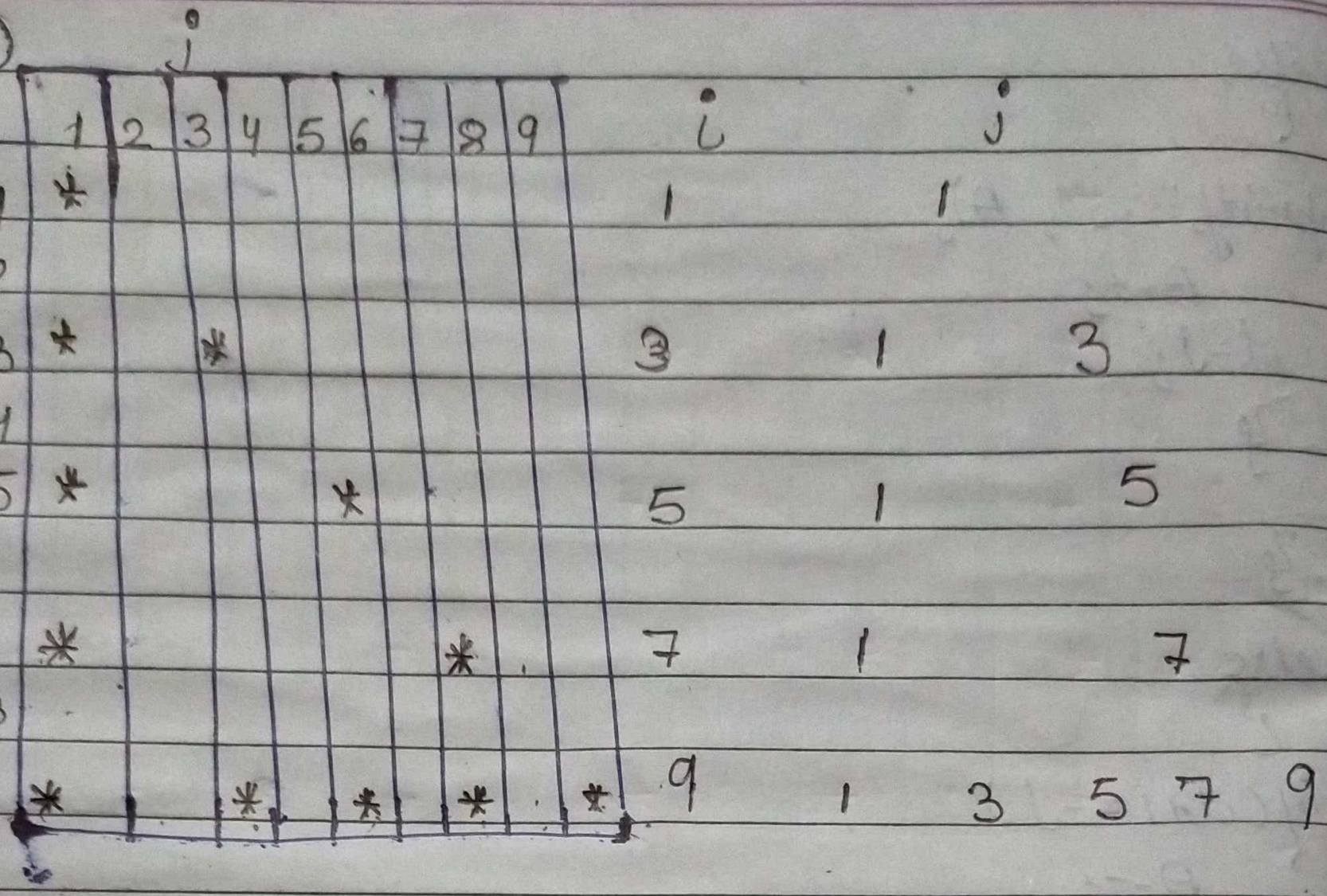


```
#include <stdio.h>
int main()
{
int i, j, row, column, k;
printf("Enter row and column");
scanf("%d %d", &row, &column);
printf("%d %d\n", row, column);

for(i=1; i<=row; i++)
{

for(j=1; j<=column; j++)
if(i%2==0)
{
printf("\n");
continue;
}
```

```
for(j=1;j<=column;j++)
    {
if(j==1||j==i)
    printf("*");

else if(i==row)
    {
for(k=2;k<=column;k++)
    {

if(k%2==0)
    printf(" ");

else
    printf("*");

}
j=k-1;

}

else
    printf(" ");

}
printf("\n");

}
```

(15)

| | j | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| i=1 | | | | | | | | | * |
| 2 | | | | | | | | | |
| 3 | | | | | | | * | | * |
| 4 | | | | | | | | | |
| 5 | | | | | * | | | | * |
| 6 | | | | | | | | | |
| 7 | | | * | | | | | | * |
| 8 | | | | | | | | | |
| 9 | * | | * | | * | | * | | * |

```
#include <stdio.h>
   int main()
   {
int i, j, k, row, column;
printf("Enter row and column\n");
scanf("%d%d", &row, &column);
printf("%d %d\n", row, column);
for(i=1; i<=row; i++)
   {
   if(i%2==0)
      {
      printf("\n");
      continue;
      }
```

```
for(j=1; j<=column; j++)
  {
if(j==column+1-i || j==column)
    printf("*");

else if(i==row)
  {
for(k=2; k<=column; k++)
  {
  if(k%2==0)
    printf(" ");

  else
    printf("*");

  }
  j=k-1;

  }
else
printf(" ");

  }

printf("\n");
  }
  return 0;
  }
```

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| i \ j | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | * | | | | |
| 2 | | | | | | | | | |
| 3 | | | | * | | * | | | |
| 4 | | | | | | | | | |
| 5 | | | * | | | | * | | |
| 6 | | | | | | | | | |
| 7 | | * | | | | | | * | |
| 8 | | | | | | | | | |
| 9 | * | * | * | * | * | * | * | * | * |

K =

| i | j |
|---|---|
| 1 | 5 |
| 3 | 4 1 6 |
| 5 | 3 7 |
| 7 | 2 8 |
| 9 | 1 9 |

| 5-(i-K) |
|---|
| |
| 5+(1-1) |
| 5+(i-K) |

| i | j | | |
|---|---|---|---|
| 1 | | | 5-(1-1) |
| 2 | | | |
| 3 | 5-1 | 5+1 | ⇒ 5-(3-2) |
| 4 | | | |
| 5 | 5-2 | 5+2 | ⇒ 5-(5-3) |
| 6 | | | |
| 7 | 5-3 | 5+3 | 5-(7-4) |
| 8 | | | |
| 9 | 5-4 | 5+4 | 5-(9-5) |

```
#include<stdio.h>
int main()
{
int i,j,k=1; row, column, l;
printf("Enter row and column\n");
scanf("%d%d", &row, &column);
printf("%d %d", row, column);

for(i=1; i<=row; i++)
{                    if(i%2==0)
                     {printf("\n");
                      continue;
                     }
for(j=1; j<=column; j++)
{
if(j==(column+1)/2-(i-k) || j==(column+1)/2+(i-k))
printf("*");

else if(i==row)
{
for(k=2; l<=column; l++)
printf("*");
j=k;

}

else
printf(" ");

}
k++;
printf("\n");
}
```

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| i \ j | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | * | * | * | * | * | * | * | * | * |
| 2 | | | | | | | | | |
| 3 | | * | | | | | | * | |
| 4 | | | | | | | | | |
| 5 | | | * | | | | * | | |
| 6 | | | | | | | | | |
| 7 | | | | * | | * | | | |
| 8 | | | | | | | | | |
| 9 | | | | | * | | | | |

i j

| i \ j | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | 2 | | | | | | 8 | |
| 4 | | | | | | | | | |
| 5 | | | 3 | | | | 7 | | |
| 6 | | | | | | | | | |
| 7 | | | | 4 | 6 | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | 5 | | | | |

5-4 5+4
5-3 5+3
5-2 5+2
5-1 5+4

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```
#include<stdio.h>
    int main()
      {
    int i,j, row, column, K=3; l;
printf("Enter. row and column\n");
 scanf("%d %d", &row, &column);
printf("%d %d", row, column);

for(i=1; i<=row; i++)
    {

if(i%2==0)
      {
    printf("\n");
     continue;
      }
for(j=1; j<=column; j++)
    {
if(i==1)
  {
for(l=1; l<=column; l++)
      {
    printf("*");
     j=l;
      }
else if (j==(column+1)/2-K || j==(column+1)/2+K)
```

printf(" *");

else
printf(" ");

}
k--;
printf("\n");
}
}

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