

ASSIGNMENT:4

LP-2

(N-Queens)

#N-Queens

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

```
#include<math.h>
```

```
int a[30],cnt=0;
```

```
int place(int pos)
```

```
{
```

```
int i;
```

```
for(i=1;i<pos;i++)
```

```
{
```

```
if((a[i]==a[pos])||((abs(a[i]-a[pos])==abs(i-pos))))
```

```
return 0;
```

```
}
```

```
return 1;
```

```
}
```

```
void print_sol(int n)
```

```
{
```

```
int i,j;
```

```
cnt++;
```

```
printf("\nSolution %d\n",cnt);
```

```
for(i=1;i<=n;i++)
```

```
{
```

```
for(j=1;j<=n;j++)
```

```
{
```

```
if(a[i]==j)
```

```
printf("Q\t");
```

```
else
```

```
printf("*\t");
```

```
}
```

```
printf("\n");
}
}
void queen(int n)
{
int k=1;
a[k]=0;
while(k!=0)
{
do
{
a[k]++;
}
while((a[k]<=n)&&!place(k));
if(a[k]<=n)
{
if(k==n)
print_sol(n);
else
{
k++;
a[k]=0;
}
}
else
k--;
}
}
int main()
{
int i,n;
printf("\nEnter the number of queens");
```

```
scanf("%d",&n);  
queen(n);  
printf("\nTotal solutions =%d",cnt);  
}
```

Output:

Enter the number of queens4

Solution 1

*	Q	*	*
*	*	*	Q
Q	*	*	*
*	*	Q	*

Solution 2

*	*	Q	*
Q	*	*	*
*	*	*	Q
*	Q	*	*

Total solutions =2