program-18

#include<stdio.h>

#include<math.h>

#include<stdlib.h>

int board[20],count;

void print(int n)

{

int i,j;

printf("\n\nSolution %d:\n\n",++count);

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

printf("\t%d",i);

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

{

printf("\n\n%d",i);

for(j=1;j<=n;++j) //for nxn board

{

if(board[i]==j)

printf("\tQ"); //queen at i,j position

else

printf("\t-"); //empty slot

}

}

}

/\*funtion to check conflicts

If no conflict for desired postion returns 1 otherwise returns 0\*/

int place(int row,int column)

{

int i;

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

{

//checking column and digonal conflicts

if(board[i]==column)

return 0;

else

if(abs(board[i]-column)==abs(i-row))

return 0;

}

return 1; //no conflicts

}

//function to check for proper positioning of queen

void queen(int row,int n)

{

int column;

for(column=1;column<=n;++column)

{

if(place(row,column))

{

board[row]=column; //no conflicts so place queen

if(row==n) //dead end

print(n); //printing the board configuration

else //try queen with next position

queen(row+1,n);

}

}

}

int main()

{

int n,i,j;

void queen(int row,int n);

printf(" - N Queens Problem Using Backtracking -");

printf("\n\nEnter number of Queens:");

scanf("%d",&n);

queen(1,n);

return 0;

}

output:

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ ./n-queens

- N Queens Problem Using Backtracking -

Enter number of Queens:4

Solution 1:

1 2 3 4

1 - Q - -

2 - - - Q

3 Q - - -

4 - - Q -

Solution 2:

1 2 3 4

1 - - Q -

2 Q - - -

3 - - - Q

4 - Q - -