Ahsanullah University of Science and Technology (AUST)

Department of Computer Science and Engineering

Course No: CSE4108
Course Title: Artificial Intelligence Lab

Assignment Number: 02

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Section: A

Lab Group: A2

Question:

Write the code to find the value of ‘Heuristic Function 2’ or ‘h2’ in python.

Solution Code:

```
initstate   =[(1,1,1),(1,2,2),(1,3,3),(2,1,8),(2,2,0),(2,3,4),(3,1,7),(3,2,6),
(3,3,5)]
goalstate =[(1,1,8),(1,2,1),(1,3,2),(2,1,3),(2,2,6),(2,3,4),(3,1,0),(3,2,7),
(3,3,5)]
cnt = 0
i=0
while(i<=8):
   if initstate[i][2]==0:
      continue
   val=goalstate[i][2]
   row=goalstate[i][0]
   col=goalstate[i][1]
   for j in range(9):
      if val==initstate[j][2]:
         if col1==initstate[j][1] and row1==initstate[j][0]:
            cnt=cnt+0

         elif col==initstate[j][1]:
            cnt =cnt+abs(row-initstate[j][0])

         elif row==initstate[j][0]:
            cnt=cnt+abs(col-initstate[j][1])
```

```
        else :
            cnt=cnt+abs(row-initstate[j][0])+abs(col-initstate[j][1])

print(cnt)
```

Output:

```
>>>
========== RESTART: E:/4.1 semester/AI Lab/1.py ==========
8
>>>
```

Question:

Write the code to find the value of ‘Heuristic Function 3’ or ‘h3’ for 8-queen problem in python.

Solution Code:

```
queens=[(1,6,1), (2,1,2), (3,5,3), (4,7,4), (5,4,5),  (6,3,6), (7,8,7), (8,1,8)]
print("The Value of H3")
i=0
cnt=0
while(i<=7):
   row=queens[i][1]
   col=queens[i][2]

   for j in range (8):
      if((queens[j][1]>row or queens[j][1]<row)and queens[j][2]==col):
         cnt=cnt+1

   for m in range (8):
      if(queens[m][2]>col and(queens[m][1]==row)):
         cnt=cnt+1

   for n in range (8):
      if(queens[n][1]==queens[n][2]):
```

```
        cnt=cnt+1
print(cnt)
```