PROGRAM-20

TOWER OF HANOI PROBLEM

AIM:-
To write and execute the python program for the Tower of hanoi program.

PROCEDURE:-
Define the Tower of Hanoi Function:
- Define a recursive function hanoi to solve the Tower of Hanoi problem.
- The function takes four parameters: the number of discs n, the source peg source, the target peg target, and the auxiliary peg auxiliary.
- The base case occurs when there are no discs to move (n == 0), in which case the function returns without performing any actions.
- In the recursive case (n > 0):
  - Move n-1 discs from the source peg to the auxiliary peg using recursion.
  - Move the nth disc from the source peg to the target peg.
  - Move the n-1 discs from the auxiliary peg to the target peg using recursion.
.

CODING:-

```
def hanoi(n, source, target, auxiliary):

    if n > 0:

        hanoi(n - 1, source, auxiliary, target)

        print(f"Move disc {n} from {source} to {target}")

        hanoi(n - 1, auxiliary, target, source)

if __name__ == "__main__":

    num_discs = 3

    hanoi(num_discs, 'A', 'C', 'B')
```

OUTPUT:-


```
IDLE Shell 3.11.4                                                    —    □    ×

File  Edit  Shell  Debug  Options  Window  Help

    Python 3.11.4 (tags/v3.11.4:d2340ef, Jun  7 2023, 05:45:37) [MSC v.1934 64 bit (
    AMD64)] on win32
    Type "help", "copyright", "credits" or "license()" for more information.
>>>
    = RESTART: C:/Users/User/AppData/Local/Programs/Python/Python311/program 20.py
    Move disc 1 from A to C
    Move disc 2 from A to B
    Move disc 1 from C to B
    Move disc 3 from A to C
    Move disc 1 from B to A
    Move disc 2 from B to C
    Move disc 1 from A to C
>>>
```

RESULT:-

Hence the program has been successfully executed and verified.