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Artificial Intelligence Lab

Lab-1-(B)

Aim : → Implementation of Foy Problem - 10 Coin Puzzle

Problem Formulation :

To make two piles of coin each with same number of heads up where the give condition is such that there are 5 coin head up and 5 coin tail up but not which one which.

The coins are flipped any number of time

Initial State :-

H	T	T	H	H	H	T	H	T	T
---	---	---	---	---	---	---	---	---	---

Final state:

P1	T	H	H	H	H
P2	H	H	H	H	T

Problem Solving :

Make a 2 pile with an equal number of coins,
Now, flip all the coin in one of the pile.

For Example :

P1 : H T T T T

P2 : H H H H T

By flipping P1

P1 : T H H H H

P2 : H H H H T

∴ No of head in P1 = No of head in P2

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EXPERIMENT NO: 1(B)

IMPLEMENTATION OF TOY PROBLEM
(10 COINS PUZZLE)

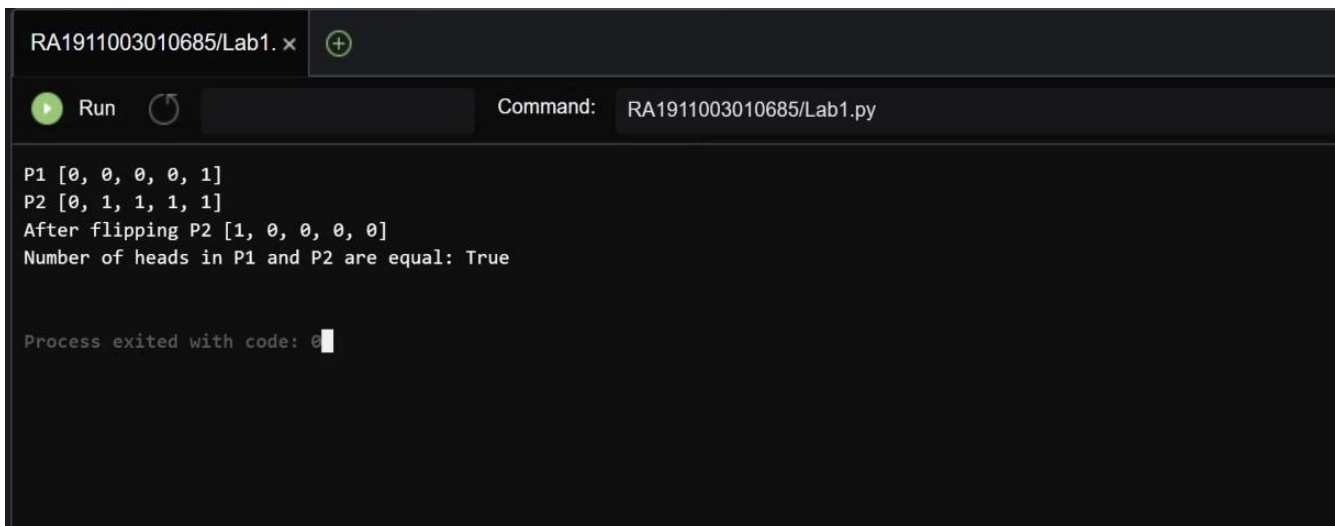
Source code:

```
#10 Coins puzzle
#1 represents head and 0 represents tail
import random
P1=[]
P2=[]
for i in range(5):
    P1.append(random.randint(0,1))
print("P1",P1)
count1=0;
count0=0;
for i in P1:
    if(i==0):
        count0=count0+1
    else:
        count1+=1
for i in range(5-count0):
    P2.append(0)
for i in range(5-count1):
    P2.append(1)
print("P2",P2)
for i in range(5):
```

```
    if P2[i]==0:
        P2[i]=1
    else:
        P2[i]=0
print("After flipping P2",P2)

cnt=0
for i in range(5):
    if P2[i]==0:
        cnt+=1
print("Number of heads in P1 and P2 are equal:", cnt==count0);
```

Output:



The screenshot shows a Jupyter Notebook interface with a terminal window. The terminal output displays the execution of a Python script. It starts with the initial state of two arrays, P1 and P2. P1 is [0, 0, 0, 0, 1] and P2 is [0, 1, 1, 1, 1]. The script then flips P2, resulting in [1, 0, 0, 0, 0]. Finally, it checks if the number of heads in P1 and P2 are equal, which is True. The process exited with code 0.

```
RA1911003010685/Lab1. x (+)
Run Command: RA1911003010685/Lab1.py
P1 [0, 0, 0, 0, 1]
P2 [0, 1, 1, 1, 1]
After flipping P2 [1, 0, 0, 0, 0]
Number of heads in P1 and P2 are equal: True

Process exited with code: 0
```

Result:

Hence, the implementation of 10 Coins Puzzle is done successfully.