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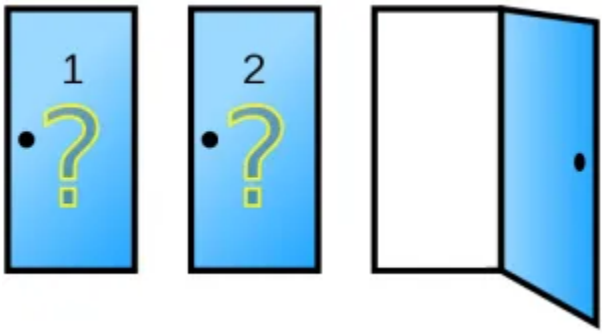
EXP-7 Monty hall problem

AIM

To implement a program for Monty Hall Problem.

Monty Hall Problem

Monty Hall asks you to choose one of three doors. One of the doors hides a prize and the other two doors have no prize. You state out loud which door you pick, but you don't open it right away.Monty opens one of the other two doors, and there is no prize behind it. At this moment, there are two closed doors, one of which you picked.The prize is behind one of the closed doors, but you don't know which one.



Monty asks you, "Do you want to switch doors?"

The majority of people assume that both doors are equally like to have the prize. It appears like the door you chose has a 50/50 chance. Because there is no perceived reason to change, most stick with their initial choice.

Program

```
import random

A = "A"
B = "B"
C = "C"

doors = ["A", "B", "C"]

prize = random.choice(doors)

selection = raw_input("Select door 'A', 'B', or 'C': ")

print """
This problem relies on conditional probabilities.
It is suggested that you switch doors, you will have a higher probability of winning of you
do."""
```

```
if selection == prize:
	remaining = list(set(doors) - set(prize))
	open_door = random.choice(list(set(doors) - set(random.choice(remaining))))
	alternate = random.choice(list(set(doors) - set(open_door) - set(prize)))

else:
	open_door = random.choice(list(set(doors) - set(selection) - set(prize)))
	alternate = random.choice(list(set(doors) - set(open_door) - set(selection)))

print """
The door I will now open is: %r
""" % open_door

second_chance = raw_input("Would you like to select the third door? Type 'Yes' or 'No': ")

if second_chance == "Yes":
	print """
	The door you will switch to is: %r """ % alternate

	if alternate == prize:
		print """
		Congrats, you win! The prize was behind the alternate, %r""" % alternate
	else:
		print """
		Sorry, the prize was behind the original door %r""" % prize


if second_chance != "Yes":
	print """
	You decided to keep your initial door, %r""" % selection
	if selection != prize:
		print """
		Sorry, the prize was behind the alternate door, %r""" % prize
	else:
		print """
		Congrats, you win! The prize was behind your original selection, %r""" % selection


print """
This is a check:"""

print "Prize: %r" % prize
print "Selection: %r " % selection
print "Alternate: %r " % alternate
print "Door opened: %r " % open_door
```

Output

```
RA1911026010029:~/environment/RA1911026010029/exp7 $ python exp7.py
Select door 'A', 'B', or 'C': B

This problem relies on conditional probabilities.
It is suggested that you switch doors, you will have a higher probability of winning of you do.

The door I will now open is: 'A'

Would you like to select the third door? Type 'Yes' or 'No': Yes

        The door you will switch to is: 'C'

                Congrats, you win! The prize was behind the alternate, 'C'

This is a check:
Prize: 'C'
Selection: 'B'
Alternate: 'C'
Door opened: 'A'
RA1911026010029:~/environment/RA1911026010029/exp7 $
```

AWS Screenshot

exp7.py × bash - "ip-172-31-2-88" ×

```
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print """
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if second_chance == "Yes":
        print """
        The door you will switch to is: %r """ % alternate

        if alternate == prize:
                print """
```

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Observation

The concept of monty hall problem has been studied and understood through this experiment.

Result

Thus the program for monty hall problem has been successfully implemented.