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|  | Bansilal Ramnath Agarwal Charitable Trust's  Vishwakarma Institute of Information Technology  **Department of**  **Artificial Intelligence and Data Science** | | |
| Name: Siddhesh Dilip Khairnar | | | |
| Class: TY | Division: B | | Roll No: 372028 |
| Semester: V | | Academic Year: 2023-2024 | |
| Subject Name & Code: ADUA31201: Artificial Intelligence | | | |
| Title of Assignment: Monty Hall problem with three doors | | | |
| Date of Performance:24-10-2023 | | Date of Submission: 11-11-2023 | |

**ASSIGNMENT NO. 7**

**CODE:**

import random

def run\_trial(switch\_doors, ndoors=3):

    chosen\_door = random.randint(1, ndoors)

    if switch\_doors:

        revealed\_door = 3 if chosen\_door == 2 else 2

        available\_doors = [dnum for dnum in range(

            1, ndoors + 1) if dnum not in (chosen\_door, revealed\_door)]

        chosen\_door = random.choice(available\_doors)

    return chosen\_door == 1

def run\_trials(ntrials, switch\_doors, ndoors=3):

    nwins = 0

    for i in range(ntrials):

        if run\_trial(switch\_doors, ndoors):

            nwins += 1

    return nwins

ndoors, ntrials = 3, 10000

nwins\_without\_switch = run\_trials(ntrials, False, ndoors)

nwins\_with\_switch = run\_trials(ntrials, True, ndoors)

print('Monty Hall Problem with {} doors'.format(ndoors))

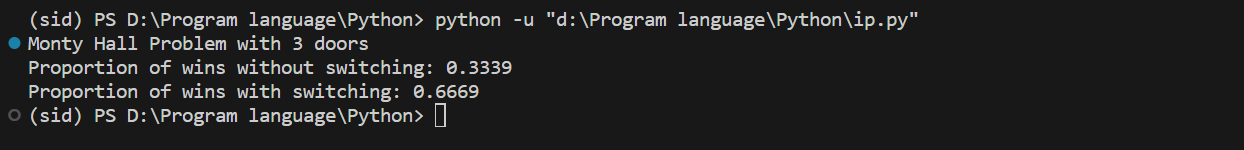
print('Proportion of wins without switching: {:.4f}'.format(

    nwins\_without\_switch / ntrials))

print('Proportion of wins with switching: {:.4f}'.format(

    nwins\_with\_switch / ntrials))

**OUTPUT:**

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