**EXPERIMENT NO. 3**

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| **Student Name and Roll Number: SANDEEP 21CSU228** |
| **Semester /Section: 5Th / AIML-V-A2** |
| **Link to Code:** |
| **Date:25/08/2023** |
| **Faculty Signature:** |
| **Marks/Grade:** |

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| **Objective(s):**  Solve the Multi-Armed Bandit Problem |
| **Outcome:** Understanding and comparing bandit strategies. |
| **Problem Statement:** Solve the muti-armed bandit problem using the Upper Confidence Bound Algorithm. Compare the reward obtained with random sampling. |
| **Background Study:** In probability theory and machine learning, the **multi-armed bandit problem** (sometimes called the ***K* or *N*-armed bandit problem** is a problem in which a fixed limited set of resources must be allocated between competing (alternative) choices in a way that maximizes their expected gain, when each choice's properties are only partially known at the time of allocation, and may become better understood as time passes or by allocating resources to the choice. This is a classic reinforcement learning problem that exemplifies the exploration–exploitation tradeoff dilemma. |
| **Question Bank:**   1. Differentiate between exploration and exploitation. 2. Differentiate between greedy and epsilon greedy strategies for solving Multi-armed bandit problem. 3. Explain the Upper Confidence Bound Algorithm for solving Multi-armed bandit problem. |

**Student Work Area**

**Algorithm/Flowchart/Code/Sample Outputs**

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**A computer screen shot of a code

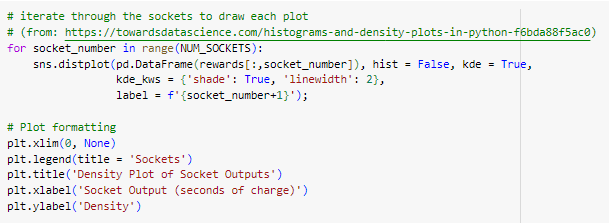
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