**Logo

Description automatically generated**

**San Francisco Bay University**

**CS483 - Fundamentals of Artificial Intelligence**

**Homework Assignment #5**

**Due day: 8/6/2022**

**Instruction:**

1. **Push the source code to Github**
2. **Overdue homework submission could not be accepted.**
3. **Take academic honesty and integrity seriously (Zero Tolerance of Cheating & Plagiarism)**
4. Create random forest based on the following dataset in **bootstrapping** method taking the recommended number of subset selection (*e.g. sqrt(n)*) on the handouts as reference. And then write Python function to compare with your hand-analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Red | Green | Blue | Size (cm) | Fruit (Label) |
| 0 | **1** | **0** | **0** | **7** | **Apple** |
| 1 | **0** | **1** | **0** | **20** | **Water Melon** |
| 2 | **1** | **0** | **0** | **1** | **Cherry** |
| 3 | **0** | **1** | **0** | **7.5** | **Apple** |
| 4 | **1** | **0** | **0** | **1** | **Strawberry** |
| 5 | **1** | **0** | **0** | **0.8** | **Cherry** |

1. Given a function *,* find max *f(x)* value if *x* ∈ [-2, 2] in Python program by genetic algorithm, considering 1-digit precision of fractional decimal *x*. And then verify your program running result by the function plot curve in Python or Excel

*\*Notice that in your answer sheet, 1st iteration hand-calculation must be shown including encoding, fitness function, population size determination, Cmin value for parent selection in Roulette Wheel method, crossover rate/mutation rate selections, and the number of evolution generations as termination condition*