Assignment requirements/suggestions:

Email me your code that implements or solves the given problems with each problem in a separate file.

Please reuse code between different problems and do not cut and paste. Include functions that are used in multiple problems in their own file.

Make your code clean and readable, including comments where appropriate.

Make any plots and figures professional looking and readable. Label things appropriately (axes, legends, etc.) and present the data is a clear manner.

Ensure your code runs and provide an code example that shows how I would run your code for different inputs. I will return code that throws an error to you to fix.

Try to make your code efficient but do not spend too much time optimizing the code for speed.

Please provide any specific results in a Word or PDF formats.

1. [10 points] Write a code that implements a version of either a brute force or Monte Carlo method for N-dimensional problems.

2. [10 points] Write a code that implements a version of basin hopping for N-dimensional problems.

3. [10 points] Write a code that implements a version of either particle swarm or differential evolution for N-dimensional problems.

4. [25 points] Write a code that uses a method from #1-3 that finds the global minimum of the Ackley function:
$$F(x,y) = -20e^{-\frac{1}{5}\sqrt{\frac{1}{2}(x^2+y^2)}} - e^{\frac{1}{2}[\cos(2\pi x)+\cos(2\pi y)]} + e^1 + 20.$$

5. [25 points] Write a code that uses a method from #1-3 that finds the global minimum of the N-dimensional Rosenbrock function from the previous assignments.

6. [25 points] Write a code that uses a method from #1-3 that finds the global minimum of the two-dimensional routing problem from Assignment #2 and resolve Problem #6 from Assignment #2.