CSI-SPARK Preparatory Workshop - Session Dates - AY2022-2023

Sessions run 2:30 to 3:10 pm (40 minutes) on Mondays

Date	Topics	Source Code File
10/3/2022	**Session 01 - Python Fundamentals**	
10/17/2022	Variables, Data types, print function	age_converter.py
	for loops, range, Functional Equations	gaussian_sum.py
	TASK 01 - Temperature Conversion	celsius_to_fahrenheit
10/24/2022	**Session 02 - Arrays and Algorithms**	
11/7/2022	if statement, def, mod operator	perfect_numbers.py
	Numpy arrays, Vectorized Operations	basel_series.py
	Random Numbers	coprime_probability.py
	TASK 02 - Lowest Common Multiple	lcm_gcd.py
11/21/2022	**Session 03 - 2D Graphics**	
12/5/2022	Plotting (matplotlib)	plot_parabola.py
	Polar Coordinates	plot_circle.py
	Parametric Equations	plot_rose_curves.py
	TASK 03 - Brownian Motion	random_walk.py
12/19/2022	**Session 04 - Computational Mathematics**	
1/23/2023	Precision, Rate of Convergence	herons_method.py
	Mean, Natural Logarithm	random_straws.py
	Complex Numbers, Series	euler_identity.py
	TASK 04 - Estimating Infinite Series	logarithm_series.py
1/30/2023	**Session 05 - Data Structures and Files**	
	Lists & Tuples, CSV Files	ideal_gas_law.py
	Dictionaries, JSON Files	manage_fruits.py
	Binary Data, Pickle Files	sample_sinusoid.py
	TASK 05 -	
2/6/2023	**Session 06 - Strings and Histograms**	
	Encodings, ASCII, UTF-8	reverse_string.py
	Reading Text Files	freq_histogram.py
	Frequency Analysis	caesar_decrypt.py
	TASK 06 -	
2/27/2023	**Session 07 - Probabilty and Statistics**	
	Mean, Variance, Std Deviation	hero_abilities.py
	Moment of Distribution	uniform_variance.py
	Central Limit Theorem	pachinko_normal.py
	TASK 07 -	

3/6/2023 **Session 08 - Curve Fitting**

Linear Regression	ohms_law.py
Quadratic Regression	breaking_distance.py
Spline Interpolation	cubic_splines.py
TASK 08 -	

3/20/2023 **Session 09 - 3D Graphics**

3D Cartesian Coordinates	plot3d_monolith.py
Oblique Projection, Vertices, Facets	plot3d_pyramid.py
Spherical Coordinates	plot3d_sphere.py
Volume of Revolution	plot3d_torus.py
TASK 09 -	

4/3/2023 **Session 10 - Monte Carlo Methods**

4/17/2023

Fixed Grid vs. Random Sampling	mc_circle_prng.py
Quasi-Random Numbers	mc_circle_qrng.py
Pythagorean Theorem	mc_sphere_qrng.py
Halton QRNG - Four Dimensions	mc_hypersphere.py
High Dimensional Hyperspheres	mc_high_dimensions.py
TASK 10 -	

5/1/2023 **Session 11 - Pandas Data Science**

5/15/2023

Pandas Dataframes	sunspot_frequency.py
Analyzing Data	auto_mpg.py
Plotting Data	pulse_activity.py
TASK 11 -	