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Candidate Number: 091388 Finished Coursework_2

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1 contributor

38 lines (26 sloc) 942 Bytes

```
1 import matplotlib.pyplot as plt
2 from random import *
3
4
5 def logistic_map(initial_condition, steps=100, p=3.0):
6     """
7     Creates a list of y coordinates which can be used to plot a logistic map
8
9     :param initial_condition: Random number between 0 and 1 used
10        as a starting point
11     :param steps: Number of y coordinates to be produced
12     :param p: Parameter to be used
13     :return: A list of y coordinates
14     """
15
16     y_coords = [initial_condition]
17
18     # CREATE Y COORDINATES
19     for i in range(steps):
20         term = (p * y_coords[i]) * (1 - y_coords[i])
21         y_coords.append(term)
22
23     return y_coords
24
25 # MAIN PROGRAM
26 if __name__ == "__main__":
27
28     list_of_p = [3.0, 3.4, 3.6785, 3.84, 4]
29
30     # PLOT LOGISTIC MAPS
31     for i in list_of_p:
32         random_y = uniform(0, 1)
33         print("LOGISTIC MAP PARAMETER", i, ":", logistic_map(random_y, 100, i))
34         plt.plot(logistic_map(random_y, 100, i))
35         plt.show()
36
37
```