

CSE 410 – Summer 2018  
Project03  
30 Points  
Assignment Date: June 8<sup>th</sup>, 2018  
Due Date: June 15<sup>th</sup>, 2018

**Enhanced Dining Philosophers Problem**

Twenty philosophers have gathered in a dining room. In the dining room there are two tables and a hostess. Each table contains five forks, five plates, and fifty helpings of spaghetti. Initially all philosophers are standing around thinking or discussing topics of interest. At the end of each round there is a 20% chance (the chance is cumulative) that an individual philosopher will become hungry and get in line to be seated by the hostess at one of the tables. Once everyone who is hungry has had a chance (or the tables are at capacity) to sit down forks are grabbed and those philosophers able to acquire two forks proceed to eat. Philosophers seated at the table and possessing only one fork courteously put the fork back down on the table. Each round of dining by a given philosopher equals one helping. For each round of dining there is a 33% chance (again cumulative) that a philosopher becomes satiated and leaves the table to join those philosophers standing about. Once a seat is vacated, waiters immediately replace the used utensils and plate and the hostess seats the next philosopher waiting in line (if any). To determine who dines next, priority is given to those who have been seated at the table the longest.

Once satiated a philosopher will stand around for the number of rounds equal to the number of helpings ingested times two plus three, i.e.  $(\text{number of helpings} * 2) + 3$ . Once this number is reached the philosopher can be hungry again.

Once all the food is gone the program exits.

You will want to come up with an algorithm that will insure no starvation or deadlocks for any of the philosophers.

**Output:**

At the end of each round:

Current round:

Philosopher	Current State
Numeric ID (1-20)	(Standing - not hungry, Waiting to be seated, Standing – satiated, Seated – waiting to eat, Seated – dining.

At Program exit:

Philosopher	Rounds spent				#Helpings Eaten
	Standing	Waiting	Dining		
	Not Hungry	Satiated	Seated	In line	

**Assignment Deliverables:**

Project03.student.c

Project03.student.makefile

Project03.student.ReadMe

- The ReadMe file will include an explanation of the policy/techniques taken to insure fairness while, at the same time, preventing starvation and deadlock.