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Data Structures and Algorithms 2

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Project 2

User Manual

**Setup and Compilation**

1. Download and unzip the submission and run on a Linux machine.
2. The submission includes:
   1. Main.cpp
   2. Calculations.cpp/hpp
   3. Customer.cpp/hpp
   4. Simulation.cpp/hpp
   5. Makefile
   6. UserManual.docx (this file)
   7. Project 2 UML.png
   8. Test(Folder, used to run tests used to build programs)
3. Environment: This program has been tested on Ubuntu 18.04.3 LTS
4. Compiling: This program includes a Makefile. In the Linux command line, type “make” to compile object files.

**Running the program:** After compiling, simply type “./main” to call the main function and run the program.

**User input:** The user provides 4 numbers: n, mu, lambda, and M.

**Output:**

Final output prints to console. It will look like this:

Please enter number of arrivals to simulate (Between 1000 and 5000);

1000

Please enter average arrivals in a time period:

2

Please enter average number served in a time period:

3

Please enter number of service channels (Between 1 and 10)

2

Analytical Model:

Po (Percent Idle Time):

0.5

L (Average number of people in system):

0.75

W (Avg time customer spends in system):

0.375

Lq (Avg number of customers in queue):

0.0833333

Wq (Avg time waiting in queue):

0.0416667

Simulation Measures:

Po (Percent Idle Time):

0.5

W (Avg time customer spends in system):

0.375

Wq (Avg time waiting in queue):

0.0416667

Rho (utilization factor of the system):

0.666667