

Operating System

Semester Project

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Description:

A fast-food restaurant has a process of a Manager, Cook, Waiter, and Customer. At the start, the restaurant has one manager, cook, waiter and customer but you can create multiple Cooks and Waiters to handle more than one Customer using multithreading. When the customer will place its order, you will calculate the total preparation time of all the dishes that the customer ordered and the customer will wait for that time.

Implementation:

I created different entities’ cpp files named as Customer, Manager, Cook, and one header file for all the structs data types. The program starts by running the customer file first where we have to enter the number of customers for which the program will run. Then the manager and cook files are run. The customer will enter his name and id and it is implemented using a structure data type named Customer which is then sent to Manager using named pipe.

As soon as the manager receives customer’s information, it sends the menu to the customer using named pipe created before for the communication of customer and manager and then manager asks for the quantity of dishes customer want to order. Once the customer enters the quantity, total bill is calculated, printed on the terminal and the amount is added to the total sales of the day for the restaurant.

The manager then sends the order received to the cooks using another pipe created for the communication between manager and cooks. Meanwhile, I have statically made two cooks to prepare the order. Then the order is divided among the available cooks using multi-threading, the availability of the cook is checked using semaphores.