Homework 3

Team 10
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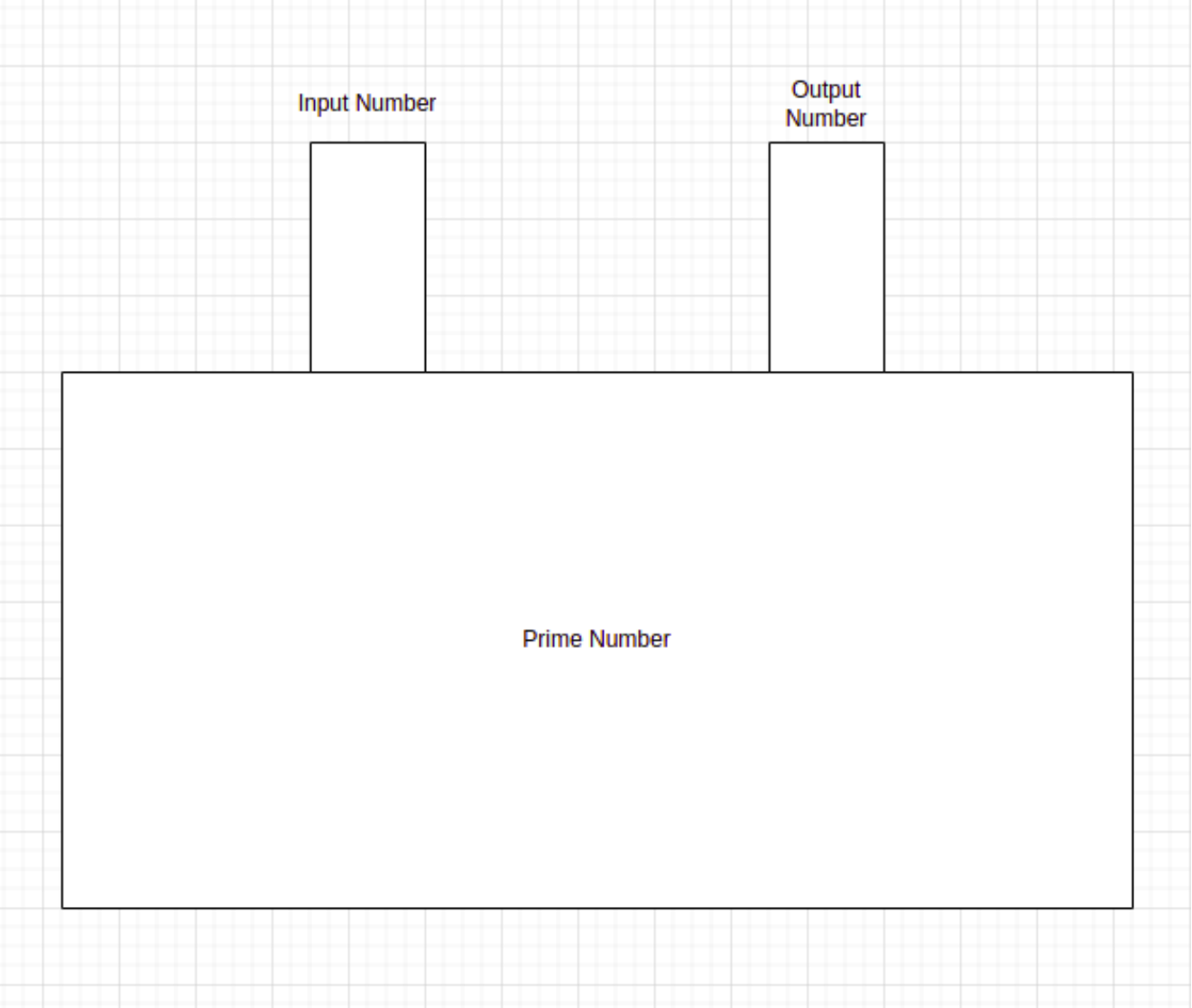
Assignment 1

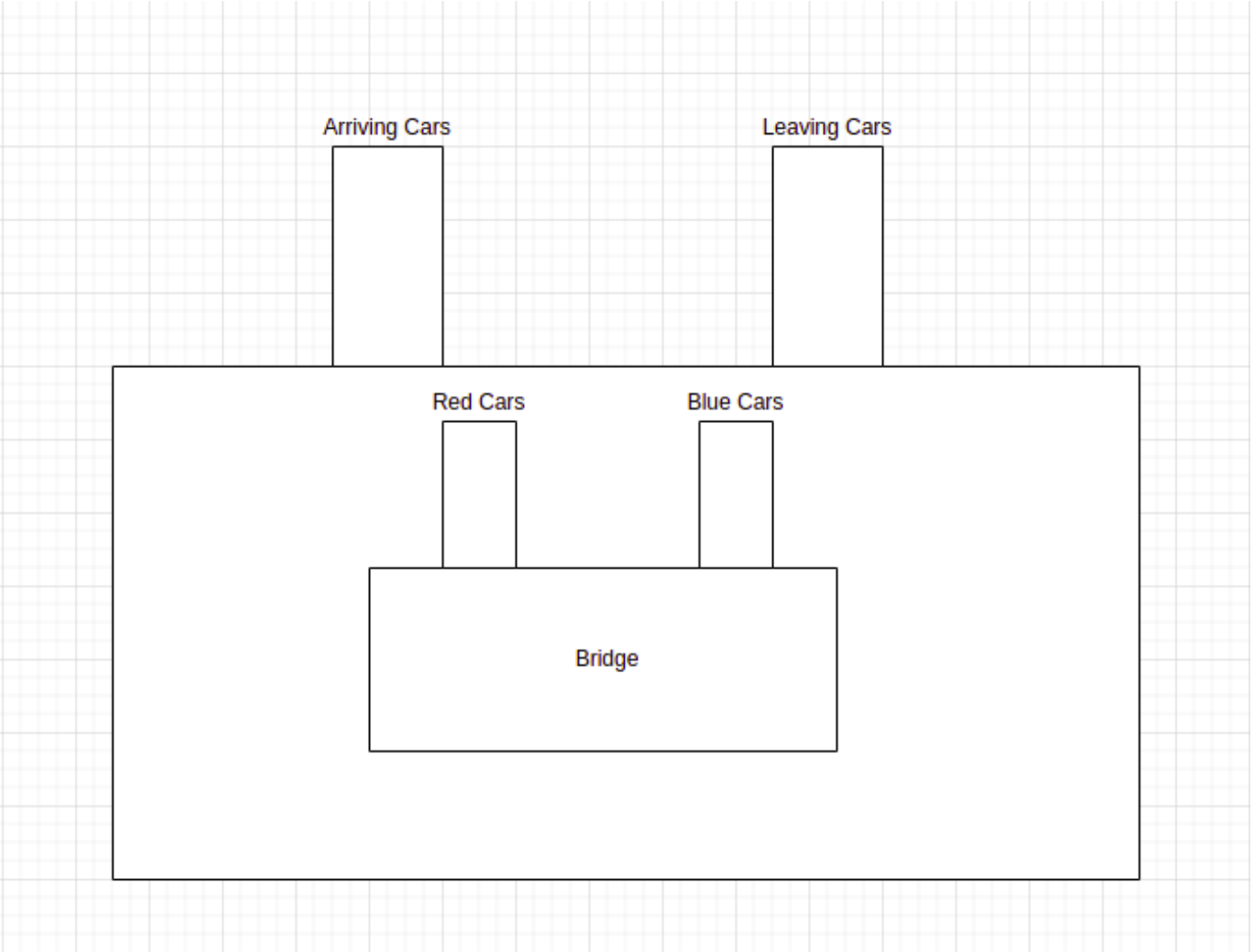


Assignment 1

- In Main:
- Create the Threads and start them.
- In Loop:
- Read the Input from the user and send it to the Threads.
- If values is -1 then the program notified the threads to exit.
- Wait to print the Output of the Threads.
- Wait for the threads to exit.
- Free all Allocated Memory

- In Worker Function:
- Waits for main to start the program.
- In Loop:
  - Read the input from the Main
  - Calculate if number is Prime or Not
- If values is -2 then the program goes to exit.
- Notify Main to exit.

Assignment 2



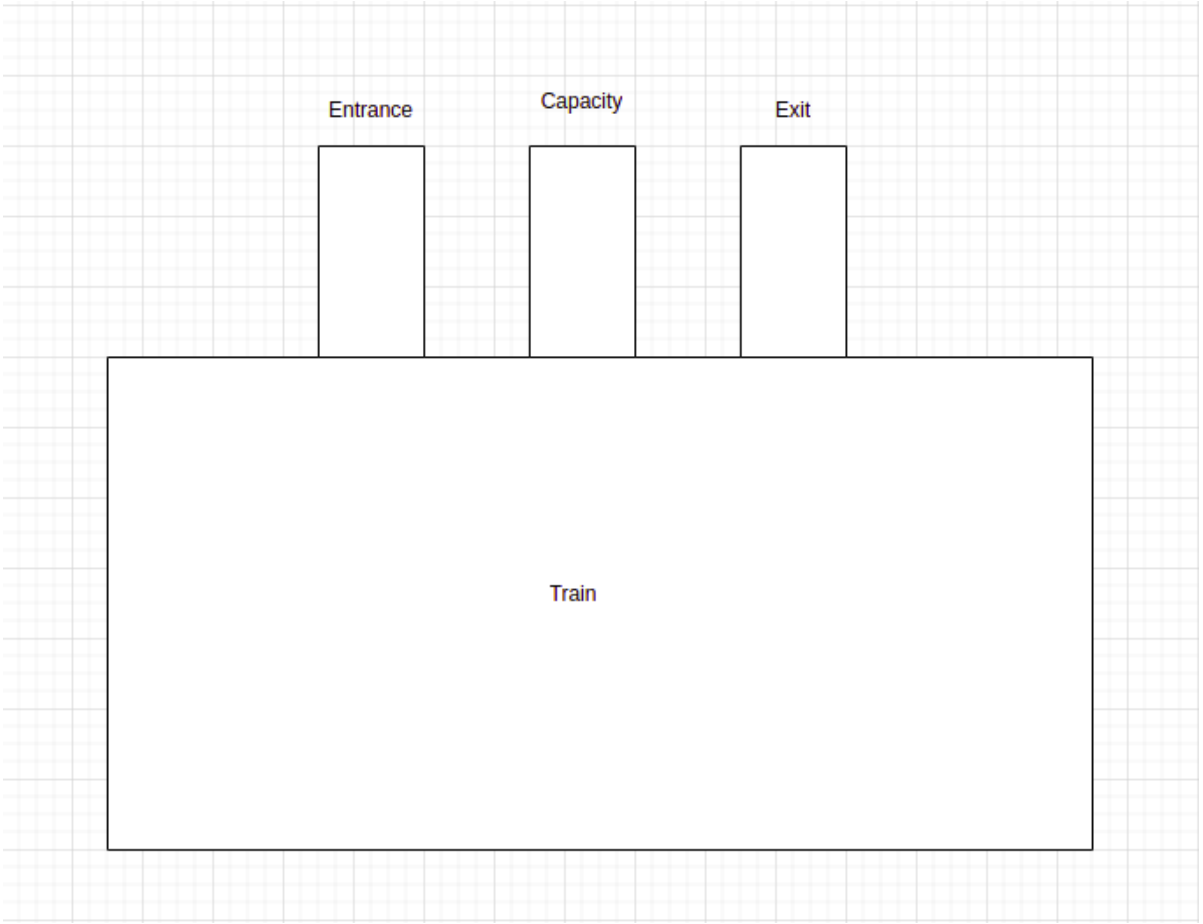
Assignment 2

- Arriving_Cars()
- Checks the color of the Car that Arrived at the edge of the Bridge
- Checks if Bridge reached Full Capacity
- If specific color has priority
- And if there are not Cars of other Color Waiting
- If all above are true Car should Cross the Bridge

- Leaving_Cars()
- Checks if the Car_On_Bridge is the last on Bridge
- Checks the color of Cars on the Bridge
- Checks if there is only one Car on the Bridge
- Prioritizes the turn of Color of Cars
- Increments the Semaphore so Cars Continue with the right turn

- Main()
- Create and Initialize the Struct of the Bridge and Mutex and Condition Variables
- Reads from file the amount of Cars, the Color and the time they need to generate new ones
- If the amount of Cars given is negative program Exits
- Destroy the Semaphores and Free all allocated Memory

Assignment 3



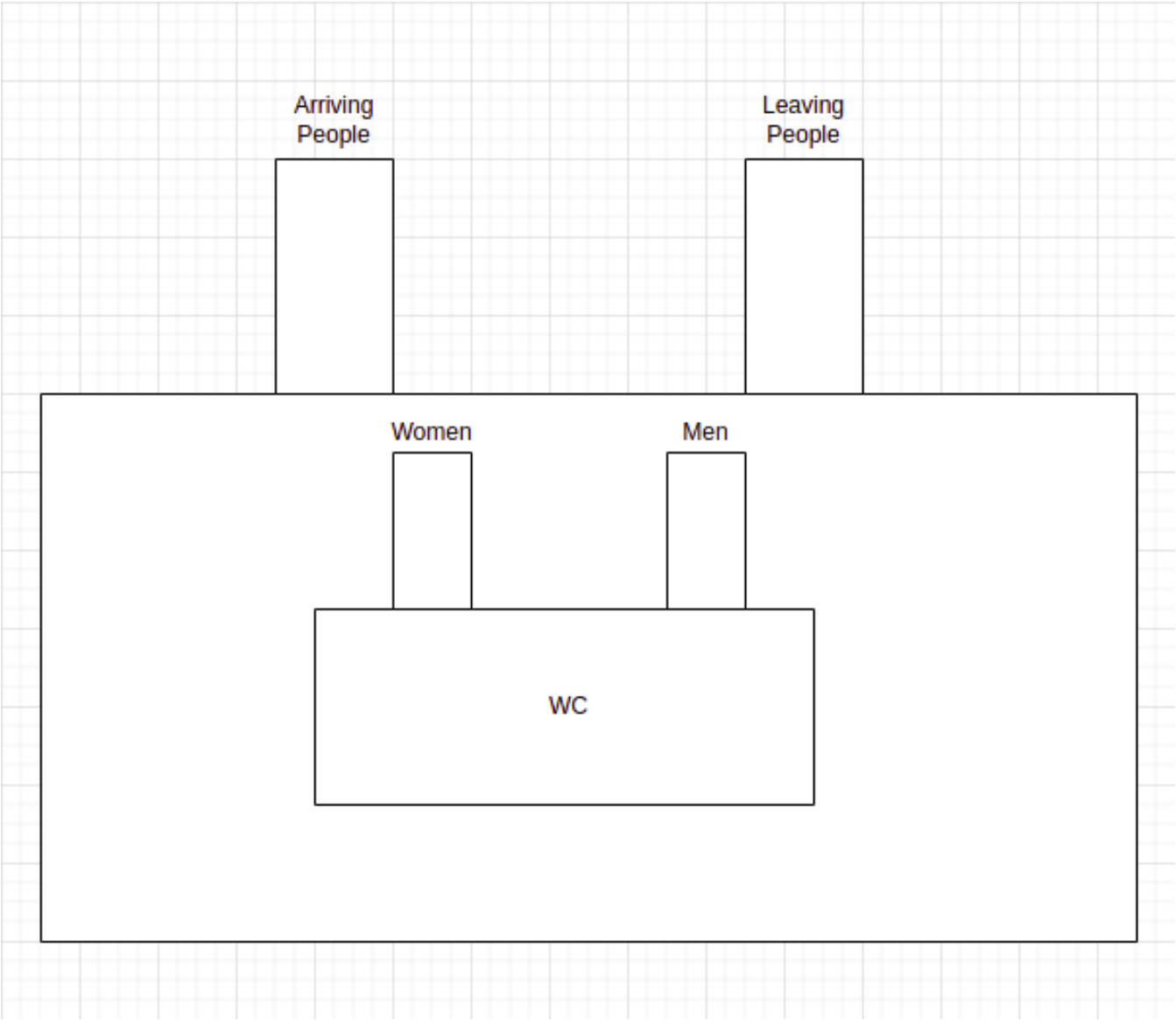
Assignment 3

- fill_train()
- Checks if Train reached max Capacity of Passengers
- If the Train is full waits until it Empties
- If the exit flag equals to 1 checks if Passengers Waiting are less than max Capacity of the Train
- If Passengers are more than max Capacity of the Train and Train is Empty exactly the amount of the Capacity boards on the Train and the rest are Waiting
- Else the Train stops its Routes and Passengers boarded Get Off the Train

- Start_Train()
- Creates the Train Thread
- Waits for the next Group of Passengers to Arrive
- Wait until Train has reached max Capacity of Passengers
- Starts the Train Route
- Informs the Passengers to Get Off the Train because Route is Finished
- If no Passengers are on the Train and Exit flag equals to 1 Train stops every Route

- In MAIN:
- Initialize the Mutex and the Condition Variables
- Create the Train Thread and start them
- Read in the standard input and create the Passengers Threads
- Wait to the next Group of Passengers to arrive
- If the Passenger is -1 then program go to close
- Wait all Passengers to make train route and to get off the train
- Destroy the Mutex and Condition and free the memory

Assignment 4



Assignment 4

- In Arriving people:
- Checks the Gender of the Person
- IN Women: the WC is full or men_waiting
- IN Men: the WC is full or someone has priority or people are not Waiting
- If this True Wait
- If the person is a Man check again the Conditions
- Else arrive at the WC

- In leaving people:
- Checking if person is the last to pass the WC
- Checking if people are arriving
- Checking if he is the last person in the WC
- Checking whose turn is
- Unlock the mutex

- In main:
- Create and Initialize the Mutex and Condition Variable
- Read and create the people and sleep for second
- If it reads negative integer, make exit flag = 1.
- Destroy the Mutex and Condition
- Free all allocated memory.