Manisa Celal Bayar University – Department of Computer Engineering
CSE 3237 Parallel Programming – Makeup Exam

Name and Surname	
Student Id	
Signature	

Question	1	2	3	4	Total
Score					

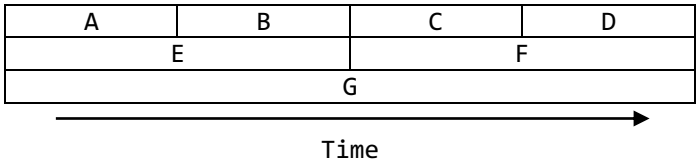
		Learning Objectives					
		L1	L2	L3	L4	L5	L6
Questions	Q1				✓		
	Q2		✓	✓			
	Q3	✓				✓	✓
	Q4				✓		

Questions

Q1 (25 Points) Mark the statements given below as True or False.

T/F	**Statement**
	Global Interpreter Lock exists for preventing threads from raising a race condition.
	Processes are not affected from Global Interpreter Lock.
	Duplex Pipe is a pair of threads which are running concurrently.
	Embarrassingly Parallel is a kind of problem that impossible to parallelize its solution.
	The main difference between a function and a coroutine that coroutines are awaitable.

Q2 (25 Points) Write and run a coroutine which schedules the coroutines A, B, C, D, E, F, G on a time scale given as:



Q3 (25 Points) The **main** function given below uses a class with the name RandomGenerator. Define this class to satisfy the following requirements:

- **RandomGenerator** should inherit from **Process** class of **multiprocessing** module.
- **RandomGenerator** should be a daemon process.
- The **main** function tries to drain the queue for every second. **RandomGenerator** should fill the queue with random numbers constantly.

```
def main():
    queue = multiprocessing.Queue()
    generator = RandomGenerator(queue)
    generator.start()
    while True:
        while not queue.empty():
            print(queue.get())
        time.sleep(1)
```

Q4 (25 Points) Complete the function **main** to use **get_weather_from_google** to create threads for each city given in **cities**, start the threads, and fetch the responses into the dictionary **data**.

```
import threading
import requests


def get_weather_from_google(city: str, data: dict = None):
    response = requests.get(
        f"https://www.google.com/search?q=weather+{city}"
    )
    data[city] = response.text


def main():
    cities = ["London", "Paris", "Manisa", "Tokyo"]
    data = {}
```

You have 90 minutes, gl hf.
Assoc. Prof. Dr. Bora Canbula