

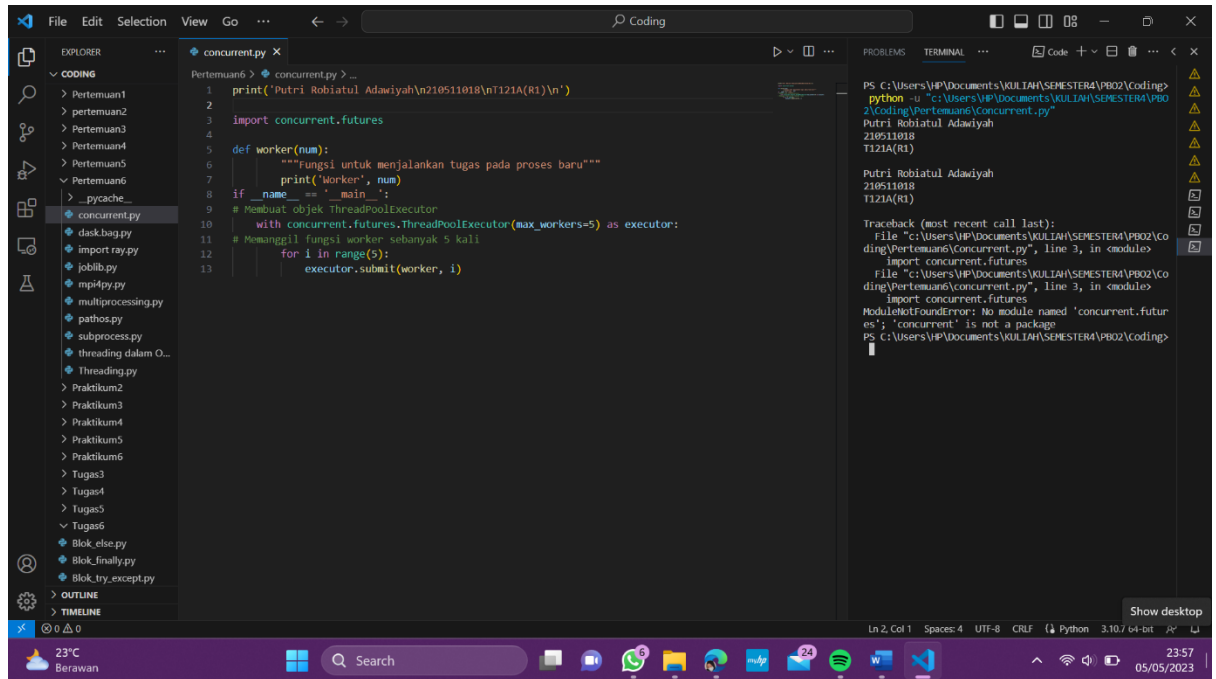
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Nim : 210511018

Kelas : TI21A (R1)

Tugas : SS Latihan 6 PBO2

## 1. Concurrent



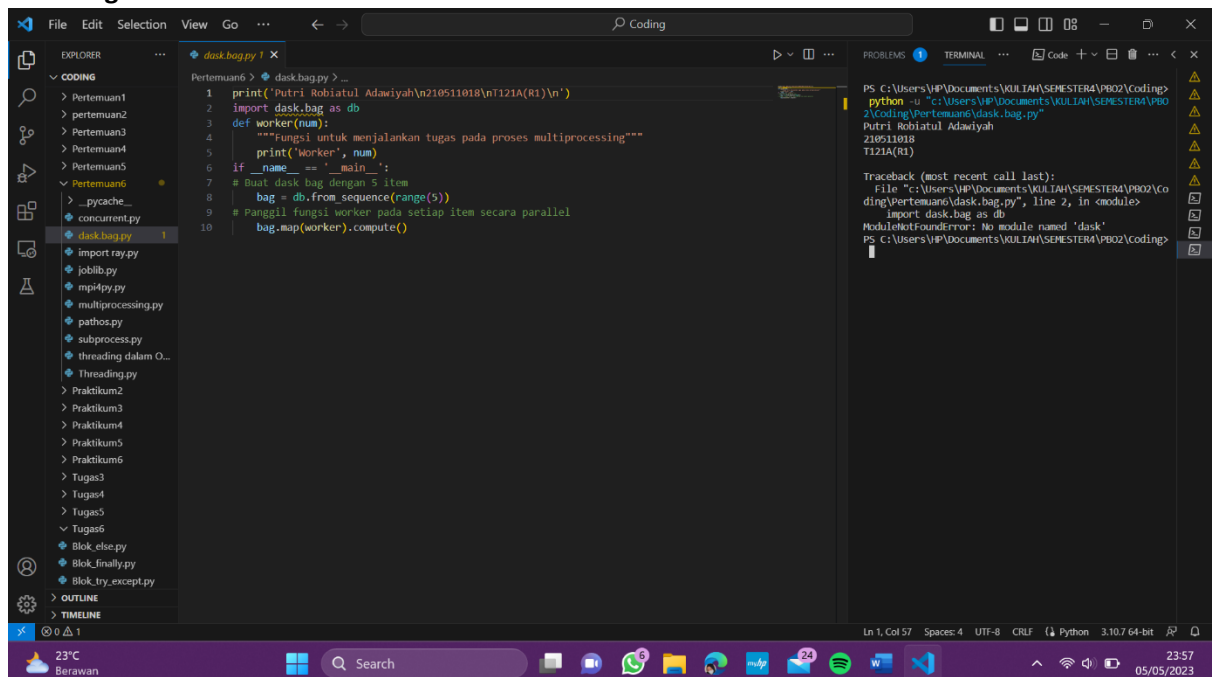
The screenshot shows a VS Code editor with a file named `concurrent.py` open. The code defines a `worker` function and uses `concurrent.futures.ThreadPoolExecutor` to execute it 5 times. The terminal window shows the command `python -u "c:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding\Pertemuan6\concurrent.py"` and a `ModuleNotFoundError: No module named 'concurrent.futures'`.

```
1 print('Putri Robi'atul Adawiyah\n210511018\nTI21A(R1)\n')
2
3 import concurrent.futures
4
5 def worker(num):
6     """fungsi untuk menjalankan tugas pada proses baru"""
7     print('worker', num)
8     if __name__ == '__main__':
9         # Membuat objek ThreadPoolExecutor
10        with concurrent.futures.ThreadPoolExecutor(max_workers=5) as executor:
11            # Memanggil fungsi worker sebanyak 5 kali
12            for i in range(5):
13                executor.submit(worker, i)
```

```
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding>
python -u "c:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding\Pertemuan6\concurrent.py"
Putri Robi'atul Adawiyah
210511018
TI21A(R1)

Traceback (most recent call last):
  File "c:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding\Pertemuan6\concurrent.py", line 3, in <module>
    import concurrent.futures
ModuleNotFoundError: No module named 'concurrent.futures'
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding>
```

## 2. Dask.bag



The screenshot shows a VS Code editor with a file named `dask.bag.py` open. The code defines a `worker` function and uses `dask.bag` to execute it 5 times. The terminal window shows the command `python -u "c:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding\Pertemuan6\dask.bag.py"` and a `ModuleNotFoundError: No module named 'dask'`.

```
1 print('Putri Robi'atul Adawiyah\n210511018\nTI21A(R1)\n')
2 import dask.bag as db
3 def worker(num):
4     """fungsi untuk menjalankan tugas pada proses multiprocessing"""
5     print('worker', num)
6     if __name__ == '__main__':
7         # Buat dask bag dengan 5 item
8         bag = db.from_sequence(range(5))
9         # Panggil fungsi worker pada setiap item secara parallel
10        bag.map(worker).compute()
```

```
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding>
python -u "c:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding\Pertemuan6\dask.bag.py"
Putri Robi'atul Adawiyah
210511018
TI21A(R1)

Traceback (most recent call last):
  File "c:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding\Pertemuan6\dask.bag.py", line 2, in <module>
    import dask.bag as db
ModuleNotFoundError: No module named 'dask'
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PRO2\Coding>
```

## 3. Import ray

The screenshot shows a Visual Studio Code editor with a file explorer on the left containing a folder named 'Pertemuan6'. The main editor window displays a Python script named 'import ray.py' with the following code:

```
1 print('Putri Robiatul Adawiyah\n210511018\n12121A(R1)\n')
2 import ray
3 @ray.remote
4 def worker(num):
5     """Fungsi untuk menjalankan tugas pada proses multiprocessing"""
6     print('Worker', num)
7 if __name__ == '__main__':
8     # Inisialisasi Ray
9     ray.init()
10    # Buat task untuk setiap item secara parallel
11    results = [worker.remote(i) for i in range(5)]
12    # Ambil hasil task secara parallel
13    ray.get(results)
```

The terminal on the right shows the command to run the script and the resulting error:

```
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding> python -u "c:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding\Pertemuan6\import ray.py"
Putri Robiatul Adawiyah
210511018
12121A(R1)

Traceback (most recent call last):
  File "c:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding\Pertemuan6\import ray.py", line 2, in <module>
    import ray
ModuleNotFoundError: No module named 'ray'
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding>
```

#### 4. Jolib

The screenshot shows a Visual Studio Code editor with a file explorer on the left containing a folder named 'Pertemuan6'. The main editor window displays a Python script named 'joblib.py' with the following code:

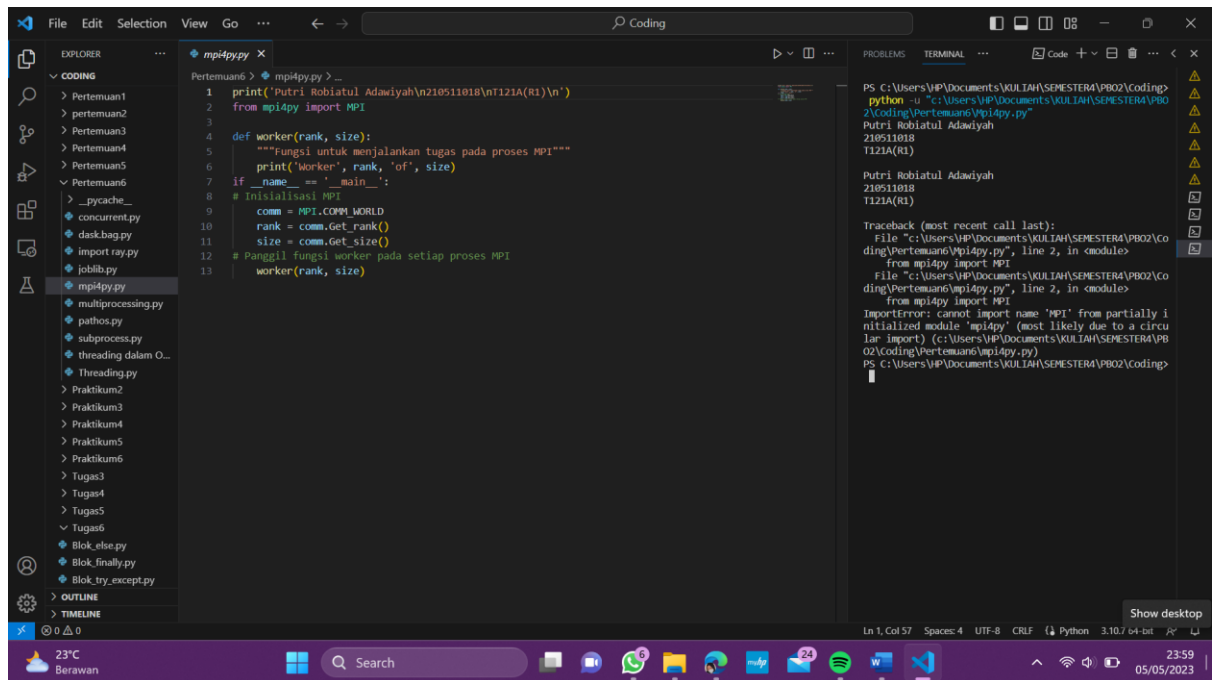
```
1 print('Putri Robiatul Adawiyah\n210511018\n12121A(R1)\n')
2 from joblib import Parallel, delayed
3
4 def worker(num):
5     """Fungsi untuk menjalankan tugas pada proses multiprocessing"""
6     print('Worker', num)
7 if __name__ == '__main__':
8     # Panggil fungsi worker secara parallel
9     Parallel(n_jobs=2)(delayed(worker)(i) for i in range(5))
```

The terminal on the right shows the command to run the script and the resulting error:

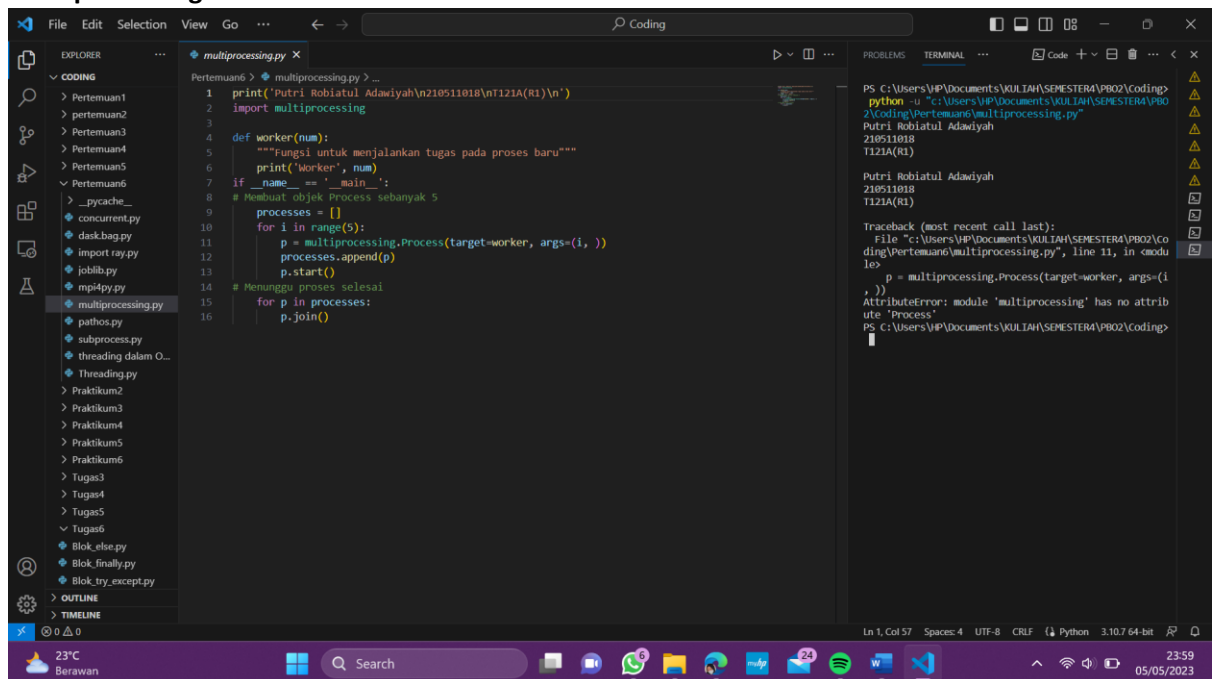
```
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding> python -u "c:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding\Pertemuan6\joblib.py"
Putri Robiatul Adawiyah
210511018
12121A(R1)

Traceback (most recent call last):
  File "c:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding\Pertemuan6\joblib.py", line 2, in <module>
    from joblib import Parallel, delayed
ImportError: cannot import name 'Parallel' from partially initialized module 'joblib' (most likely due to a circular import) (c:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding\Pertemuan6\joblib.py)
PS C:\Users\HP\Documents\KULIAH\SEMESTER4\PB02\Coding>
```

#### 5. Mpi4py



## 6. Multiprocessing



## 7. Pathos

The screenshot shows a VS Code editor with a file named `pathos.py` open. The code is as follows:

```
1 print('Putri Robiatul Adawiyah\n210511018\n12121A(R1)\n')
2 from pathos.multiprocessing import ProcessPool
3
4 def worker(num):
5     """Fungsi untuk menjalankan tugas pada proses multiprocessing"""
6     print('Worker', num)
7
8 if __name__ == '__main__':
9     # Buat ProcessPool dengan 2 proses
10    pool = ProcessPool(2)
11    # Panggil fungsi worker pada setiap item secara parallel
12    pool.map(worker, range(5))
```

The terminal on the right shows the command `python -u "c:\Users\VP\Documents\KULIAH\SEMESTER4\PB02\Coding\Pertemuan6\Pathos.py"` being executed, which results in a `ModuleNotFoundError: No module named 'pathos.multiprocessing'`.

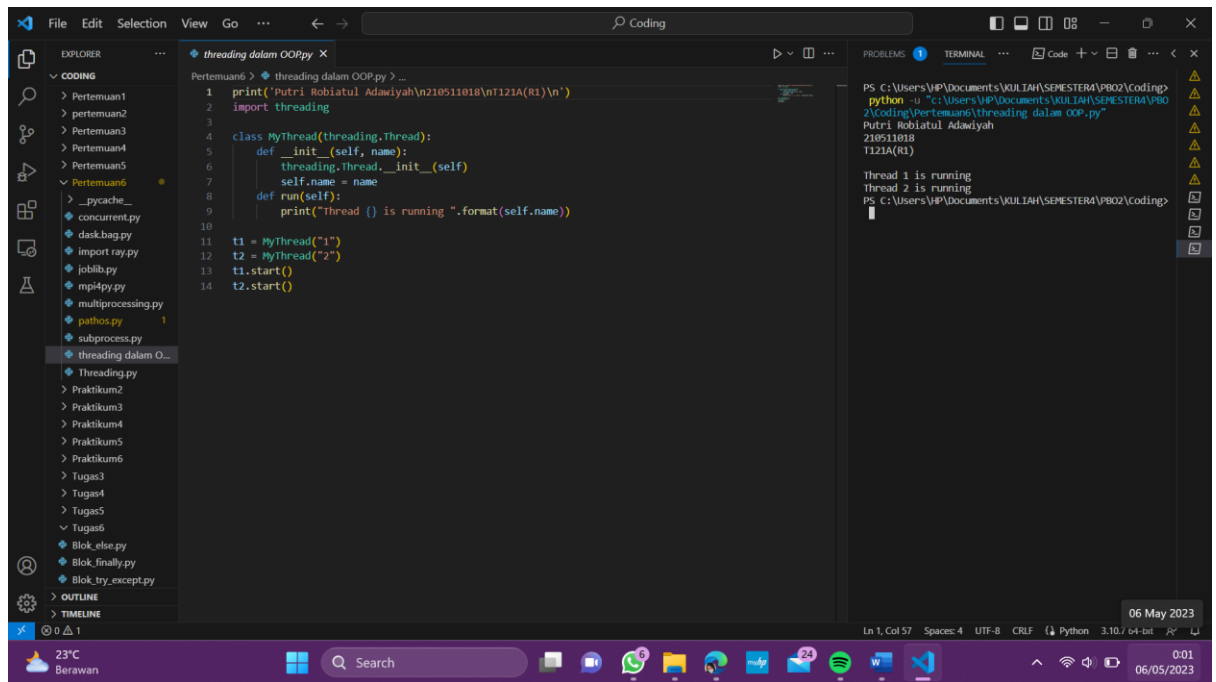
## 8. Subprocess

The screenshot shows a VS Code editor with a file named `subprocess.py` open. The code is as follows:

```
1 print('Putri Robiatul Adawiyah\n210511018\n12121A(R1)\n')
2 import subprocess
3
4 def worker(num):
5     """Fungsi untuk menjalankan tugas pada proses baru"""
6     print('Worker', num)
7
8 if __name__ == '__main__':
9     # Membuat list untuk menyimpan setiap proses
10    processes = []
11    # Memulai setiap proses dengan menggunakan subprocess.Popen
12    for i in range(5):
13        p = subprocess.Popen(['python', '-c',
14                               'import multiprocessing;
15                               multiprocessing.Process(target=worker,args=(\'+str(i)+\',)).start()'],
16                              stdout=subprocess.PIPE, stderr=subprocess.PIPE)
17        processes.append(p)
18    # Menunggu proses selesai dan mendapatkan output dari setiap proses
19    for p in processes:
20        out, err = p.communicate()
21        print(out.decode('utf-8'), err.decode('utf-8'))
```

The terminal on the right shows the command `python -u "c:\Users\VP\Documents\KULIAH\SEMESTER4\PB02\Coding\Pertemuan6\subprocess.py"` being executed, which results in an `AttributeError: module 'subprocess' has no attribute 'Popen'`.

## 9. Threading dalam OOP



## 10. Threading

