

OS Lab Assignment Sheet-2

Assignment Tasks:

1. Write a Python script to simulate a basic system startup sequence.
2. Use the `multiprocessing` module to create at least two child processes that perform dummy tasks.
3. Implement proper logging to track process start and end times.
4. Generate a log file (`process_log.txt`) to reflect system-like behavior.
5. Submit the Python script and log file along with a short report explaining your implementation.

Sub-Tasks:

1. **Sub-Task 1:** Initialize the logging configuration to capture timestamped messages.
2. **Sub-Task 2:** Define a function that simulates a process task (e.g., sleep for 2 seconds).
3. **Sub-Task 3:** Create at least two processes and start them concurrently.
4. **Sub-Task 4:** Ensure proper termination and joining of processes, and verify the output in the log file.

```

# Import required libraries
import multiprocessing
import time
import logging

# =====
# Sub-Task 1: Initialize logging
# =====
logging.basicConfig(
    filename='process_log.txt',
    level=logging.INFO,
    format='%(asctime)s - %(processName)s - %(message)s'
)

# =====
# Sub-Task 2: Define system process
# =====
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def system_process(task_name):
    """Simulates a dummy system process."""
    logging.info(f"{task_name} started")
    time.sleep(2) # Simulating some work (I/O, computation, etc.)
    logging.info(f"{task_name} ended")

```

```

# =====
# Sub-Task 3 & 4: Create, start, join processes
# =====
if __name__ == '__main__':
    print("System Starting...")

    # Create processes
    p1 = multiprocessing.Process(target=system_process, args=('Process-1',))
    p2 = multiprocessing.Process(target=system_process, args=('Process-2',))

    # Start processes
    p1.start()
    p2.start()

    # Wait for processes to complete
    p1.join()
    p2.join()

    print("System Shutdown.")

```

Output:

```
PS C:\Users\Kashish Pundir\Downloads> & 'c:\python\python.debugpy-2025.10.0-win32-x64\bundle'
System Starting...
System Shutdown.
PS C:\Users\Kashish Pundir\Downloads>
```

Log file:

```
2025-09-27 23:01:35,810 - Process-1 - Process-1 started
2025-09-27 23:01:35,830 - Process-2 - Process-2 started
2025-09-27 23:01:37,811 - Process-1 - Process-1 ended
2025-09-27 23:01:37,831 - Process-2 - Process-2 ended
```