

MSc. Computer Science
Sem – III
AOS

Assignment 4

GROUP C:

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|----------------------------|----------------------------|
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Link to the executable code

https://github.com/snigdhadip99/Msc_3rd-Sem_AOS/blob/main/Token_Ring.py

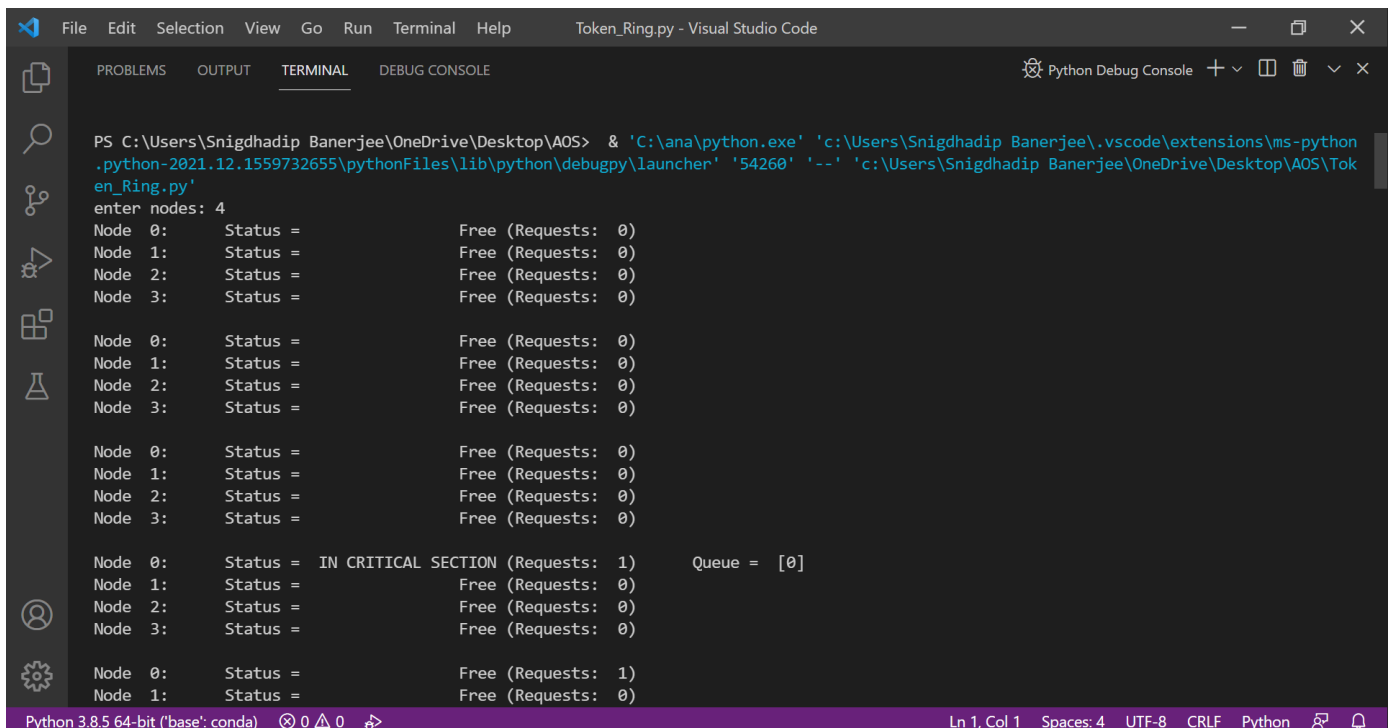
Data Sets

- The program takes the number of nodes as input at run time
Enter number of nodes: 4

Assumption:

- That node is present in the queue which is currently in Critical Section.
When the node comes out of the Critical Section, it is removed from the queue.

Screenshots



```
PS C:\Users\Snigdhadip Banerjee\OneDrive\Desktop\AOS> & 'C:\ana\python.exe' 'c:\Users\Snigdhadip Banerjee\.vscode\extensions\ms-python.python-2021.12.1559732655\pythonFiles\lib\python\debugpy\launcher' '54260' '--' 'c:\Users\Snigdhadip Banerjee\OneDrive\Desktop\AOS\Token_Ring.py'
enter nodes: 4
Node 0:      Status =      Free (Requests: 0)
Node 1:      Status =      Free (Requests: 0)
Node 2:      Status =      Free (Requests: 0)
Node 3:      Status =      Free (Requests: 0)

Node 0:      Status =      Free (Requests: 0)
Node 1:      Status =      Free (Requests: 0)
Node 2:      Status =      Free (Requests: 0)
Node 3:      Status =      Free (Requests: 0)

Node 0:      Status =      Free (Requests: 0)
Node 1:      Status =      Free (Requests: 0)
Node 2:      Status =      Free (Requests: 0)
Node 3:      Status =      Free (Requests: 0)

Node 0:      Status = IN CRITICAL SECTION (Requests: 1)   Queue = [0]
Node 1:      Status =      Free (Requests: 0)
Node 2:      Status =      Free (Requests: 0)
Node 3:      Status =      Free (Requests: 0)

Node 0:      Status =      Free (Requests: 1)
Node 1:      Status =      Free (Requests: 0)
```

Token_Ring.py - Visual Studio Code

Python Debug Console

PROBLEMS

OUTPUT

TERMINAL

DEBUG CONSOLE

Node 0: Status = Free (Requests: 1)

Node 1: Status = Free (Requests: 0)

Node 2: Status = Free (Requests: 0)

Node 3: Status = Free (Requests: 0)

Node 0: Status = Free (Requests: 1)

Node 1: Status = Free (Requests: 0)

Node 2: Status = IN CRITICAL SECTION (Requests: 1)

Node 3: Status = Requesting (Requests: 1)

Queue = [2, 3]

Node 0: Status = Requesting (Requests: 2)

Node 1: Status = Requesting (Requests: 1)

Node 2: Status = Free (Requests: 1)

Node 3: Status = IN CRITICAL SECTION (Requests: 1)

Queue = [3, 0, 1]

Node 0: Status = Requesting (Requests: 2)

Node 1: Status = Requesting (Requests: 1)

Node 2: Status = Free (Requests: 1)

Node 3: Status = IN CRITICAL SECTION (Requests: 1)

Queue = [3, 0, 1]

Node 0: Status = IN CRITICAL SECTION (Requests: 2)

Node 1: Status = Requesting (Requests: 1)

Node 2: Status = Free (Requests: 1)

Node 3: Status = Free (Requests: 1)

Queue = [0, 1]

Node 0: Status = Free (Requests: 2)

Node 1: Status = IN CRITICAL SECTION (Requests: 1)

Queue = [1, 2, 3]

Python 3.8.5 64-bit ('base': conda) 0 0 Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

Token_Ring.py - Visual Studio Code

Python Debug Console

PROBLEMS

OUTPUT

TERMINAL

DEBUG CONSOLE

Node 0: Status = Free (Requests: 2)

Node 1: Status = IN CRITICAL SECTION (Requests: 1)

Node 2: Status = Requesting (Requests: 2)

Node 3: Status = Requesting (Requests: 2)

Queue = [1, 2, 3]

Node 0: Status = Requesting (Requests: 3)

Node 1: Status = IN CRITICAL SECTION (Requests: 1)

Node 2: Status = Requesting (Requests: 2)

Node 3: Status = Requesting (Requests: 2)

Queue = [1, 2, 3, 0]

Node 0: Status = Requesting (Requests: 3)

Node 1: Status = Free (Requests: 1)

Node 2: Status = IN CRITICAL SECTION (Requests: 2)

Node 3: Status = Requesting (Requests: 2)

Queue = [2, 3, 0]

Node 0: Status = Requesting (Requests: 3)

Node 1: Status = Free (Requests: 1)

Node 2: Status = IN CRITICAL SECTION (Requests: 2)

Node 3: Status = Requesting (Requests: 2)

Queue = [2, 3, 0]

Node 0: Status = Requesting (Requests: 3)

Node 1: Status = Free (Requests: 1)

Node 2: Status = Free (Requests: 2)

Node 3: Status = IN CRITICAL SECTION (Requests: 2)

Queue = [3, 0]

Node 0: Status = IN CRITICAL SECTION (Requests: 3)

Queue = [0, 2]

Python 3.8.5 64-bit ('base': conda) 0 0 Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

Python 3.8.5 64-bit ('base': conda) 0 0

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

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Token_Ring.py - Visual Studio Code

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

Python Debug Console

Node 0: Status = IN CRITICAL SECTION (Requests: 3) Queue = [0, 2]
Node 1: Status = Free (Requests: 1)
Node 2: Status = Requesting (Requests: 3)
Node 3: Status = Free (Requests: 2)

Node 0: Status = IN CRITICAL SECTION (Requests: 3) Queue = [0, 2]
Node 1: Status = Free (Requests: 1)
Node 2: Status = Requesting (Requests: 3)
Node 3: Status = Free (Requests: 2)

Node 0: Status = Free (Requests: 3)
Node 1: Status = Free (Requests: 1)
Node 2: Status = IN CRITICAL SECTION (Requests: 3) Queue = [2]
Node 3: Status = Free (Requests: 2)

Node 0: Status = Free (Requests: 3)
Node 1: Status = Free (Requests: 1)
Node 2: Status = Free (Requests: 3)
Node 3: Status = IN CRITICAL SECTION (Requests: 3) Queue = [3]

Node 0: Status = Free (Requests: 3)
Node 1: Status = Free (Requests: 1)
Node 2: Status = Free (Requests: 3)
Node 3: Status = IN CRITICAL SECTION (Requests: 3) Queue = [3]

Node 0: Status = Requesting (Requests: 4)

Python 3.8.5 64-bit ('base': conda) 0 0

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

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Token_Ring.py - Visual Studio Code

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

Python Debug Console

Node 0: Status = Requesting (Requests: 4)
Node 1: Status = Free (Requests: 1)
Node 2: Status = IN CRITICAL SECTION (Requests: 4) Queue = [2, 0]
Node 3: Status = Free (Requests: 3)

Node 0: Status = Requesting (Requests: 4)
Node 1: Status = Free (Requests: 1)
Node 2: Status = IN CRITICAL SECTION (Requests: 4) Queue = [2, 0]
Node 3: Status = Free (Requests: 3)

Node 0: Status = IN CRITICAL SECTION (Requests: 4) Queue = [0]
Node 1: Status = Free (Requests: 1)
Node 2: Status = Done (Requests: 4)
Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)
Node 1: Status = Free (Requests: 1)
Node 2: Status = Done (Requests: 4)
Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)
Node 1: Status = Free (Requests: 1)
Node 2: Status = Done (Requests: 4)
Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)
Node 1: Status = IN CRITICAL SECTION (Requests: 2) Queue = [1]

File Edit Selection View Go Run Terminal HelpToken_Ring.py - Visual Studio Code

Python Debug Console

TERMINAL

DEBUG CONSOLE

Node 0: Status = Done (Requests: 4)

Node 1: Status = IN CRITICAL SECTION (Requests: 2) Queue = [1]

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 2)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 2)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 2)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 2)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 2)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 2)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Python 3.8.5 64-bit ('base': conda) 0 0

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

File Edit Selection View Go Run Terminal HelpToken_Ring.py - Visual Studio Code

Python Debug Console

TERMINAL

DEBUG CONSOLE

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 2)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = IN CRITICAL SECTION (Requests: 3) Queue = [1]

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = IN CRITICAL SECTION (Requests: 3) Queue = [1]

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 3)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 3)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 3)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 3)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 3)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Free (Requests: 3)

Python 3.8.5 64-bit ('base': conda) 0 0

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

Python 3.8.5 64-bit ('base': conda) 0 0 0 Python Ln 1, Col 1 Spaces: 4 UTF-8 CRLF

File Edit Selection View Go Run Terminal Help Token_Ring.py - Visual Studio Code

Python Debug Console + - [] [X]

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 3)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Free (Requests: 3)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = IN CRITICAL SECTION (Requests: 4) Queue = [1]

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = IN CRITICAL SECTION (Requests: 4) Queue = [1]

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Done (Requests: 4)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Python 3.8.5 64-bit ('base': conda) 0 0 0 Python Ln 1, Col 1 Spaces: 4 UTF-8 CRLF

File Edit Selection View Go Run Terminal Help Token_Ring.py - Visual Studio Code

Python Debug Console + - [] [X]

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = IN CRITICAL SECTION (Requests: 4) Queue = [1]

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = IN CRITICAL SECTION (Requests: 4) Queue = [1]

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Done (Requests: 4)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Done (Requests: 4)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Done (Requests: 4)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

Node 0: Status = Done (Requests: 4)

Node 1: Status = Done (Requests: 4)

Node 2: Status = Done (Requests: 4)

Node 3: Status = Done (Requests: 4)

