OPERATING SYSTEM

Assignment 4

Instructor

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Submitted by

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Question 1

You must create four threads other than the main thread.
1. Input thread
2. Reverse thread
3. Capital thread
4. Shift thread

CODE EXPLANATION:

This code demonstrates how to use threads. It uses global variables and functions to pass data between threads and uses join() to synchronize the 4 threads. In this code, first we have made 4 function and then made threads that perform different operation on input string

- The first thread reads the input string that have been taken from user
- The second thread reverse the input string
- The third thread capitalize the input string
- The fourth thread shifts each character of string 2times

All the threads wait for input thread. When the input thread finishes their task all the waiting threads start their work simultaneously. Each thread is executed at the same time. This will help in improving performance. We must make sure that threads do not interfere with each other otherwise race conditions occur and other issues.

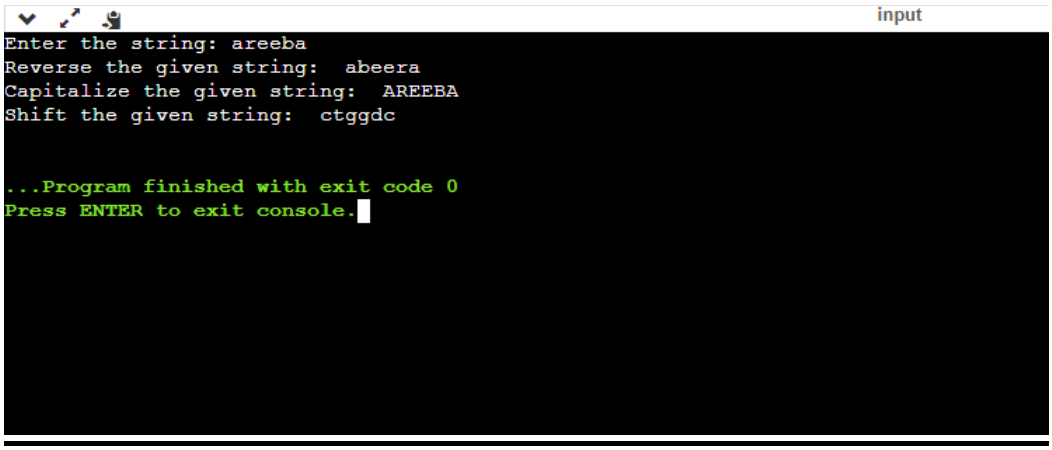
Code is implemented in python using threading module

CODE:

```python
import threading

#create 4function
#function for input string
def get_input():
  global input_string
  input_string = input("Enter the string: ")

#function for reverse string
def reverse_string(input_string):
  print("Reverse the given string: ",input_string[::-1])

#function for capitalize string
def capital_string(input_string):
  print("Capitalize the given string: ", input_string.upper())

#function for shift string
def shift_string(input_string, a):
  shifted_string = ""
  for c in input_string:
    shifted_char = chr(ord(c) + a)
    shifted_string += shifted_char
  print("Shift the given string: ",shifted_string)

#Create four thread

```

```python

#Create four thread

#Thread1 for input string
input_thread = threading.Thread(target=get_input)
input_thread.start()
input_thread.join()

#Thread 2 for reversing string
reverse_thread = threading.Thread(target=reverse_string, args=(input_string,))
reverse_thread.start()
reverse_thread.join()

#Thread 3 for capitalizing string
capital_thread = threading.Thread(target=capital_string, args=(input_string,))
capital_thread.start()
capital_thread.join()

#Thread 4 for shift string
shift_thread = threading.Thread(target=shift_string, args=(input_string, 2))
shift_thread.start()
shift_thread.join()
```

OUTPUT:



GitHub link

https://github.com/AREEBA-FAROOQ2001/IST