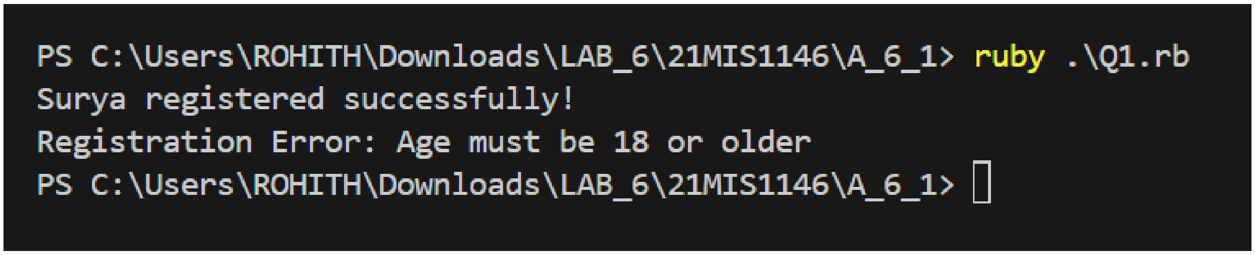
Ruby Lab Assessment 6

Suryakumar P 21MIS1146

1. Implement exception handling using raise and rescue

```
def VIT_register_student(name, age)
  begin
    raise "Age must be 18 or older" if age < 18
    puts "#{name} registered successfully!"
  rescue => e
    puts "Registration Error: #{e.message}"
  end
end

VIT_register_student("Surya", 20)
VIT_register_student("Priyanka", 17)
```

Output:



```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1> ruby .\Q1.rb
Surya registered successfully!
Registration Error: Age must be 18 or older
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1> 
```

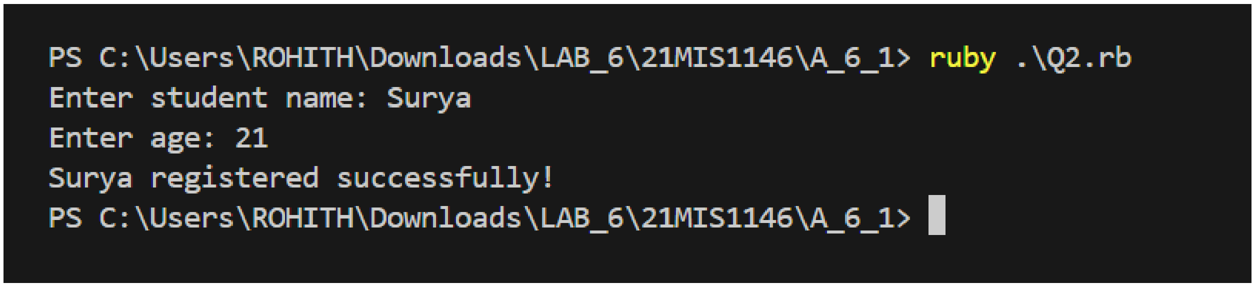
2. Implement exception handling using raise, rescue and retry

Code:

```
def VIT_register_student(name, age)
  begin
    raise "Age must be 18 or older" if age < 18
    puts "#{name} registered successfully!"
  rescue => e
    puts "Error: #{e.message}. Please enter a valid age."
    print "Enter age again for #{name}: "
    age = gets.to_i
    retry
  end
end

print "Enter student name: "
name = gets.chomp
```

```
print "Enter age: "
age = gets.to_i

VIT_register_student(name, age)
```

Output:



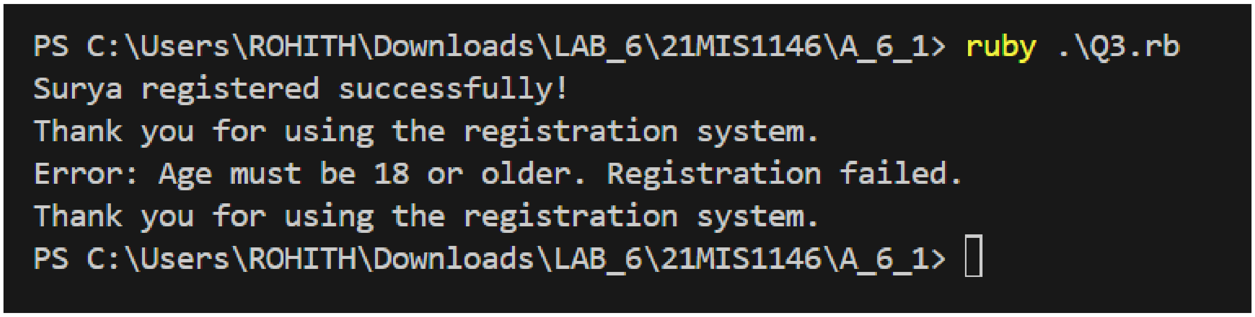
```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1> ruby .\Q2.rb
Enter student name: Surya
Enter age: 21
Surya registered successfully!
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1>
```

3. Implement exception handling using raise, rescue and ensure

Code:

```
def VIT_register_student(name, age)

  begin
    raise "Age must be 18 or older" if age < 18
    puts "#{name} registered successfully!"
  rescue => e
    puts "Error: #{e.message}. Registration failed."
  ensure
    puts "Thank you for using the registration system."
  end
end

VIT_register_student("Surya", 20)
VIT_register_student("Akilesh", 17)
```

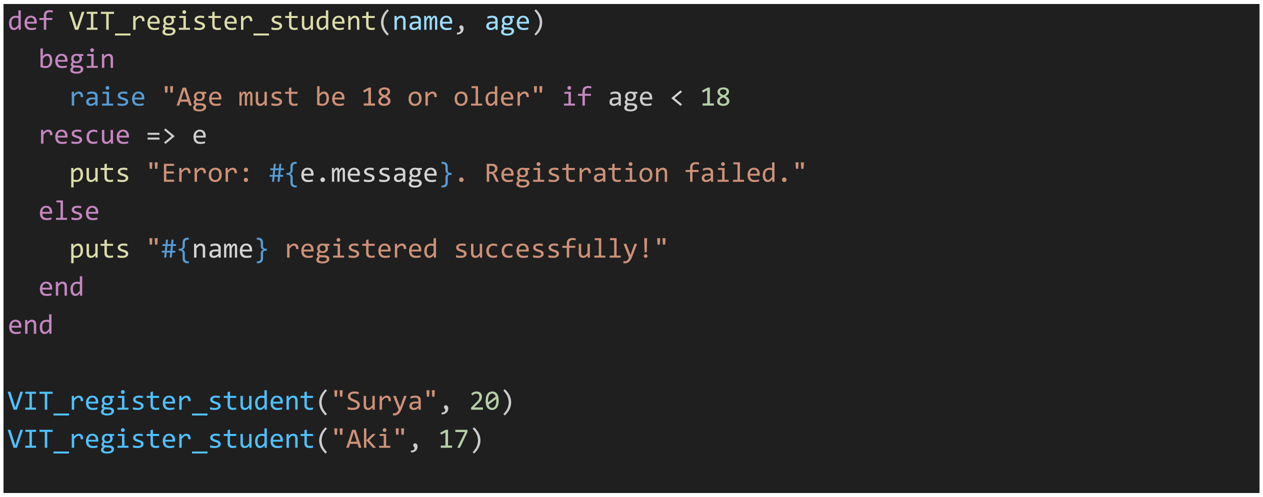
Output:



```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1> ruby .\Q3.rb
Surya registered successfully!
Thank you for using the registration system.
Error: Age must be 18 or older. Registration failed.
Thank you for using the registration system.
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1>
```

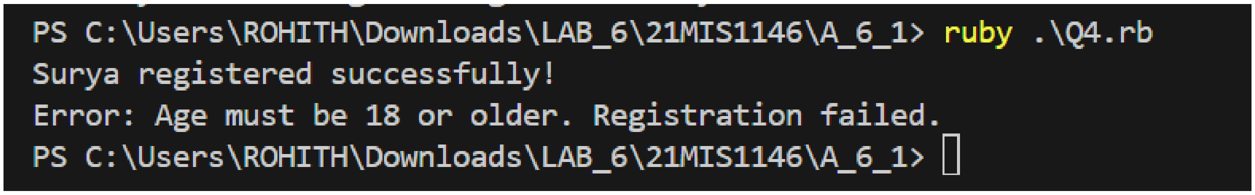
4. Implement exception handling using raise, rescue and else

Code:



```
def VIT_register_student(name, age)
  begin
    raise "Age must be 18 or older" if age < 18
  rescue => e
    puts "Error: #{e.message}. Registration failed."
  else
    puts "#{name} registered successfully!"
  end
end

VIT_register_student("Surya", 20)
VIT_register_student("Aki", 17)
```

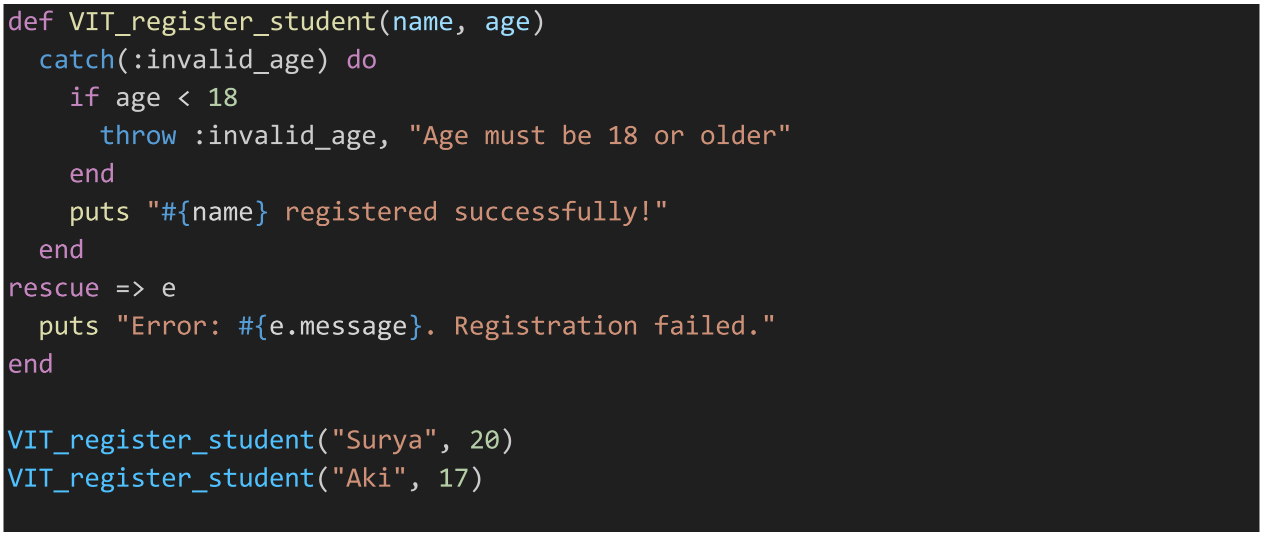
Output:



```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1> ruby .\Q4.rb
Surya registered successfully!
Error: Age must be 18 or older. Registration failed.
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1>
```

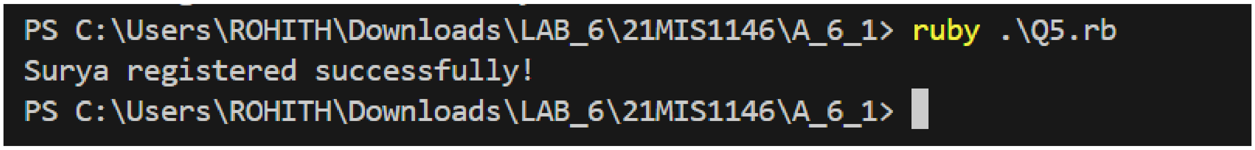
5. Implement Catch and Throw in Exception Handling

Code:



```
def VIT_register_student(name, age)
  catch(:invalid_age) do
    if age < 18
      throw :invalid_age, "Age must be 18 or older"
    end
    puts "#{name} registered successfully!"
  end
rescue => e
  puts "Error: #{e.message}. Registration failed."
end

VIT_register_student("Surya", 20)
VIT_register_student("Aki", 17)
```

Output:

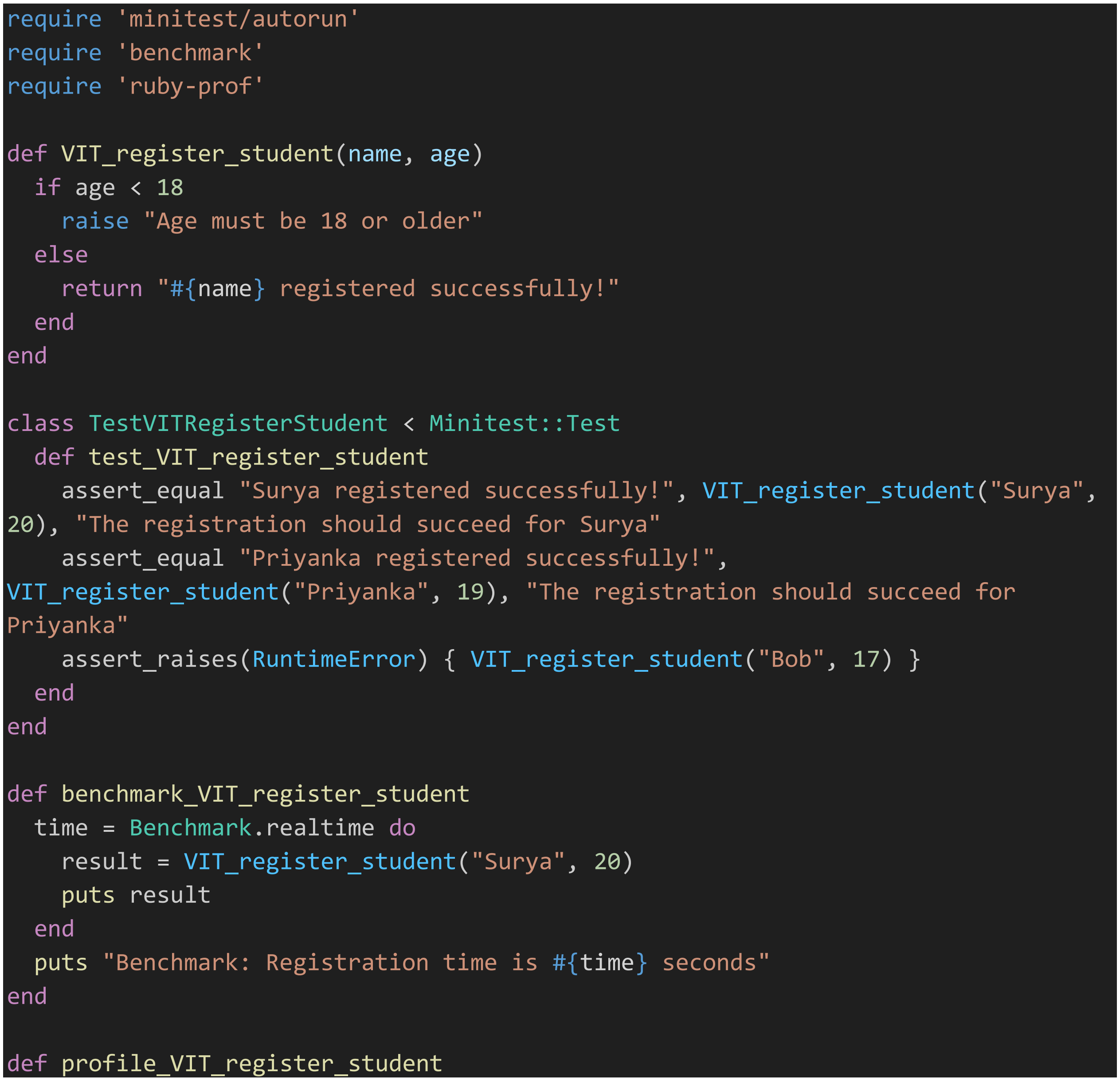


```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1> ruby .\Q5.rb
Surya registered successfully!
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_1> 
```

Assessment 6.2

6. Implement Assertion methods, Benchmarking and profiling technique to measure the performance of any ruby code.

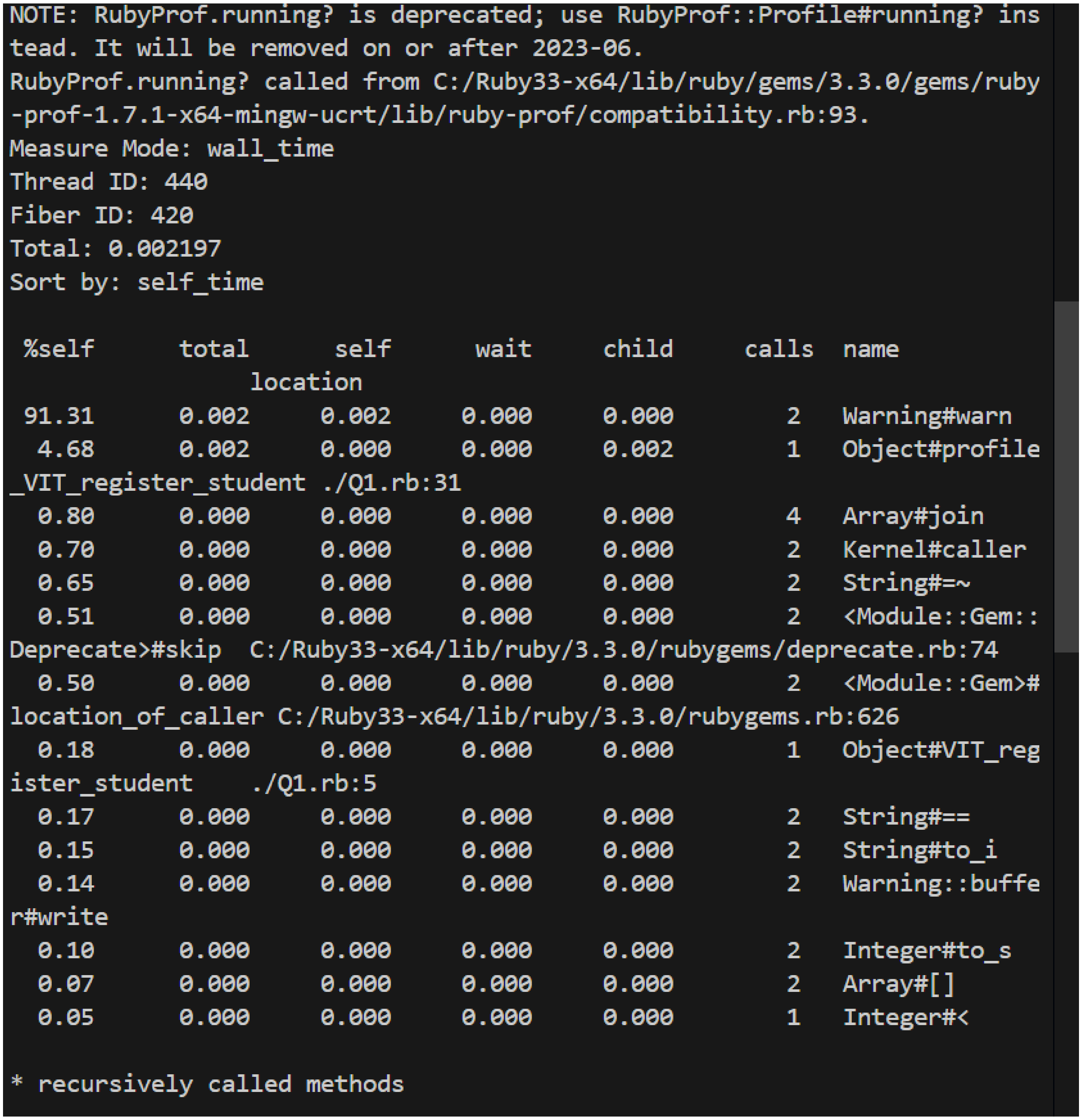
Code:



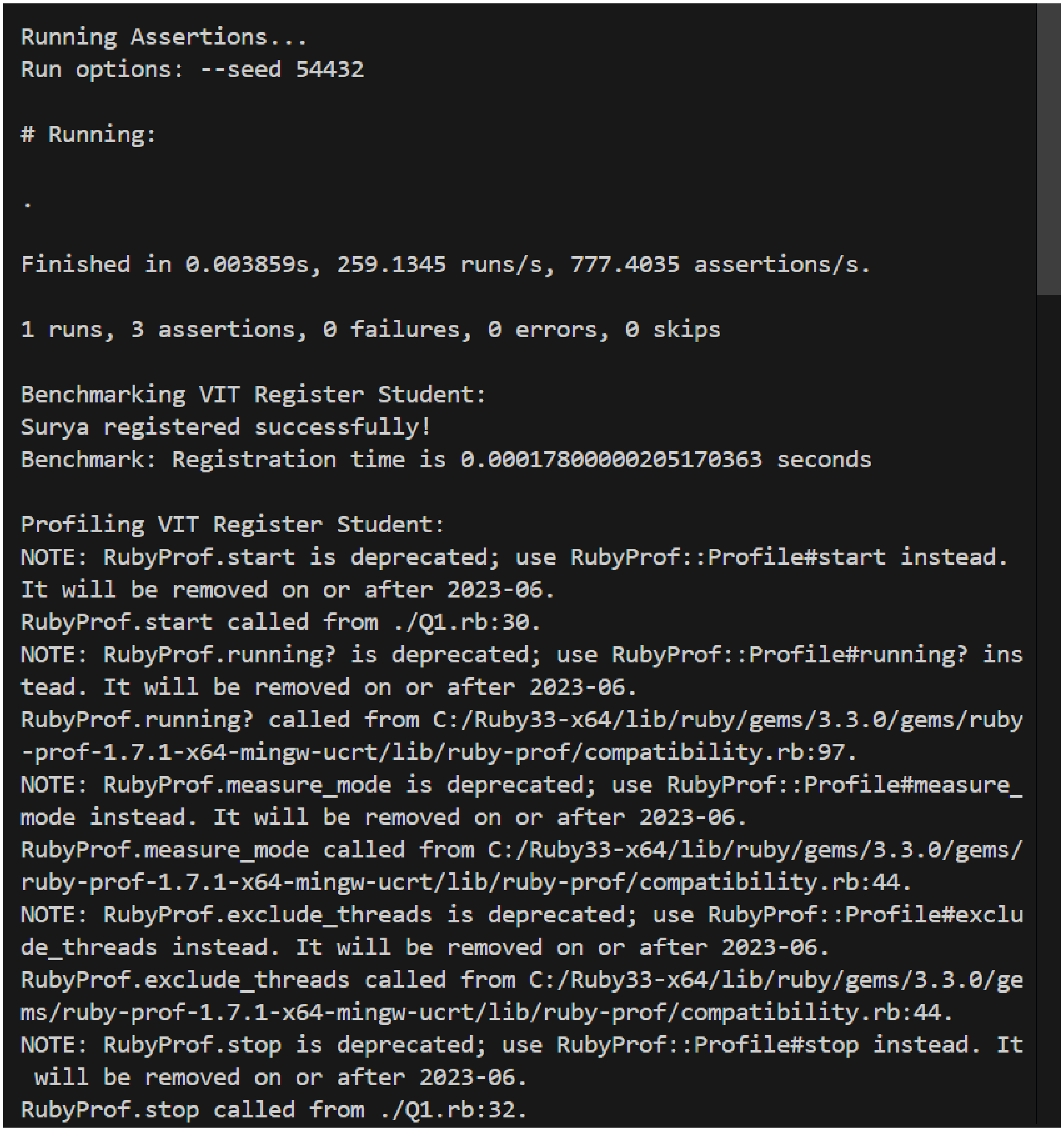
```ruby
require 'minitest/autorun'
require 'benchmark'
require 'ruby-prof'

def VIT_register_student(name, age)
  if age < 18
    raise "Age must be 18 or older"
  else
    return "#{name} registered successfully!"
  end
end

class TestVITRegisterStudent < Minitest::Test
  def test_VIT_register_student
    assert_equal "Surya registered successfully!", VIT_register_student("Surya", 20), "The registration should succeed for Surya"
    assert_equal "Priyanka registered successfully!", VIT_register_student("Priyanka", 19), "The registration should succeed for Priyanka"
    assert_raises(RuntimeError) { VIT_register_student("Bob", 17) }
  end
end

def benchmark_VIT_register_student
  time = Benchmark.realtime do
    result = VIT_register_student("Surya", 20)
    puts result
  end
  puts "Benchmark: Registration time is #{time} seconds"
end

def profile_VIT_register_student
```

```
  RubyProf.start
  VIT_register_student("Surya", 20)
  result = RubyProf.stop

  printer = RubyProf::FlatPrinter.new(result)
  printer.print(STDOUT)
end

puts "Running Assertions..."
Minitest.run

puts "\nBenchmarking VIT Register Student:"
benchmark_VIT_register_student

puts "\nProfiling VIT Register Student:"
profile_VIT_register_student
```

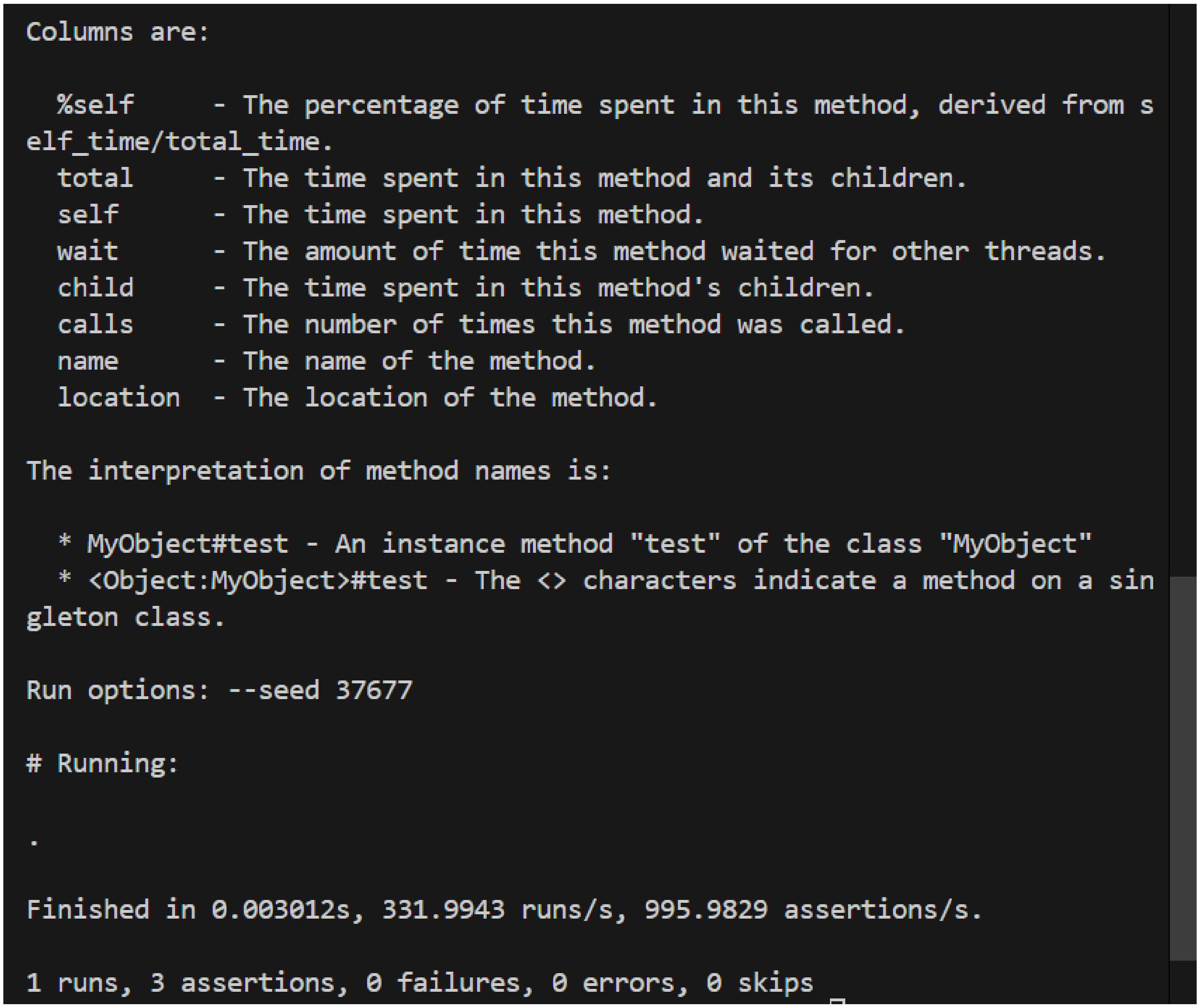
Output:



```
NOTE: RubyProf.running? is deprecated; use RubyProf::Profile#running? ins
tead. It will be removed on or after 2023-06.
RubyProf.running? called from C:/Ruby33-x64/lib/ruby/gems/3.3.0/gems/ruby
-prof-1.7.1-x64-mingw-ucrt/lib/ruby-prof/compatibility.rb:93.
Measure Mode: wall_time
Thread ID: 440
Fiber ID: 420
Total: 0.002197
Sort by: self_time

 %self      total      self      wait      child     calls   name
                 location
 91.31      0.002      0.002      0.000      0.000         2   Warning#warn
  4.68      0.002      0.000      0.000      0.002         1   Object#profile
_VIT_register_student ./Q1.rb:31
  0.80      0.000      0.000      0.000      0.000         4   Array#join
  0.70      0.000      0.000      0.000      0.000         2   Kernel#caller
  0.65      0.000      0.000      0.000      0.000         2   String#=~
  0.51      0.000      0.000      0.000      0.000         2   <Module::Gem::
Deprecate>#skip  C:/Ruby33-x64/lib/ruby/3.3.0/rubygems/deprecate.rb:74
  0.50      0.000      0.000      0.000      0.000         2   <Module::Gem>#
location_of_caller C:/Ruby33-x64/lib/ruby/3.3.0/rubygems.rb:626
  0.18      0.000      0.000      0.000      0.000         1   Object#VIT_reg
ister_student    ./Q1.rb:5
  0.17      0.000      0.000      0.000      0.000         2   String#==
  0.15      0.000      0.000      0.000      0.000         2   String#to_i
  0.14      0.000      0.000      0.000      0.000         2   Warning::buffe
r#write
  0.10      0.000      0.000      0.000      0.000         2   Integer#to_s
  0.07      0.000      0.000      0.000      0.000         2   Array#[]
  0.05      0.000      0.000      0.000      0.000         1   Integer#<

* recursively called methods
```



```
Running Assertions...
Run options: --seed 54432

# Running:

.

Finished in 0.003859s, 259.1345 runs/s, 777.4035 assertions/s.

1 runs, 3 assertions, 0 failures, 0 errors, 0 skips

Benchmarking VIT Register Student:
Surya registered successfully!
Benchmark: Registration time is 0.00017800000205170363 seconds

Profiling VIT Register Student:
NOTE: RubyProf.start is deprecated; use RubyProf::Profile#start instead.
It will be removed on or after 2023-06.
RubyProf.start called from ./Q1.rb:30.
NOTE: RubyProf.running? is deprecated; use RubyProf::Profile#running? ins
tead. It will be removed on or after 2023-06.
RubyProf.running? called from C:/Ruby33-x64/lib/ruby/gems/3.3.0/gems/ruby
-prof-1.7.1-x64-mingw-ucrt/lib/ruby-prof/compatibility.rb:97.
NOTE: RubyProf.measure_mode is deprecated; use RubyProf::Profile#measure_
mode instead. It will be removed on or after 2023-06.
RubyProf.measure_mode called from C:/Ruby33-x64/lib/ruby/gems/3.3.0/gems/
ruby-prof-1.7.1-x64-mingw-ucrt/lib/ruby-prof/compatibility.rb:44.
NOTE: RubyProf.exclude_threads is deprecated; use RubyProf::Profile#exclu
de_threads instead. It will be removed on or after 2023-06.
RubyProf.exclude_threads called from C:/Ruby33-x64/lib/ruby/gems/3.3.0/ge
ms/ruby-prof-1.7.1-x64-mingw-ucrt/lib/ruby-prof/compatibility.rb:44.
NOTE: RubyProf.stop is deprecated; use RubyProf::Profile#stop instead. It
 will be removed on or after 2023-06.
RubyProf.stop called from ./Q1.rb:32.
```



```
Columns are:

  %self     - The percentage of time spent in this method, derived from s
elf_time/total_time.
  total     - The time spent in this method and its children.
  self      - The time spent in this method.
  wait      - The amount of time this method waited for other threads.
  child     - The time spent in this method's children.
  calls     - The number of times this method was called.
  name      - The name of the method.
  location  - The location of the method.

The interpretation of method names is:

  * MyObject#test - An instance method "test" of the class "MyObject"
  * <Object:MyObject>#test - The <> characters indicate a method on a sin
gleton class.

Run options: --seed 37677

# Running:

.

Finished in 0.003012s, 331.9943 runs/s, 995.9829 assertions/s.

1 runs, 3 assertions, 0 failures, 0 errors, 0 skips
```

Assessment 7

Implement Single and Multiple TCP Connections

Single TCP:

Client.rb

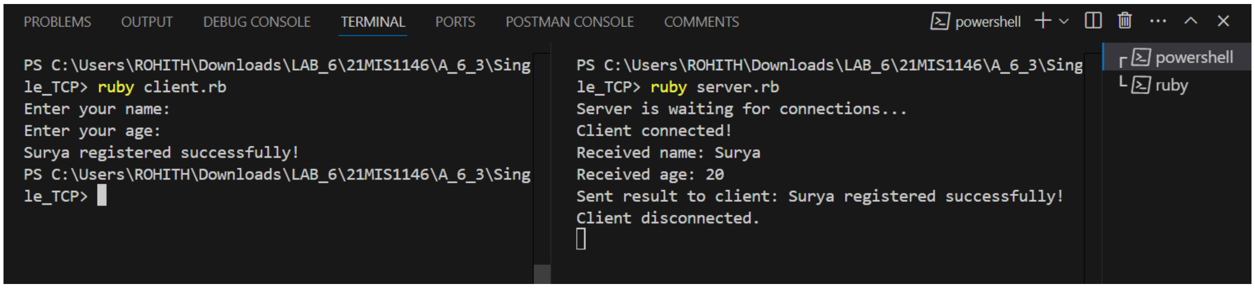
```
require 'socket'

client = TCPSocket.new('localhost', 2000)

puts client.gets.chomp
client.puts "Surya"
puts client.gets.chomp
client.puts 20
```

```
puts client.gets.chomp

client.close
```

Server.rb

```
require 'socket'
require 'thread'

def VIT_register_student(name, age)
  if age < 18
    return "Registration failed: Age must be 18 or older."
  else
    return "#{name} registered successfully!"
  end
end

server = TCPServer.new('localhost', 2000)
puts "Server is waiting for connections..."

loop do
  client = server.accept
  Thread.new(client) do |client|
    puts "Client connected!"

    client.puts "Enter your name:"
    name = client.gets.chomp
    puts "Received name: #{name}"

    client.puts "Enter your age:"
    age = client.gets.chomp.to_i
    puts "Received age: #{age}"

    result = VIT_register_student(name, age)

    client.puts result
    puts "Sent result to client: #{result}"

    client.close
    puts "Client disconnected."
  end
end
```

Output:



```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_3\Single_TCP> ruby client.rb
Enter your name:
Enter your age:
Surya registered successfully!
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_3\Single_TCP>
```

```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_3\Single_TCP> ruby server.rb
Server is waiting for connections...
Client connected!
Received name: Surya
Received age: 20
Sent result to client: Surya registered successfully!
Client disconnected.
```

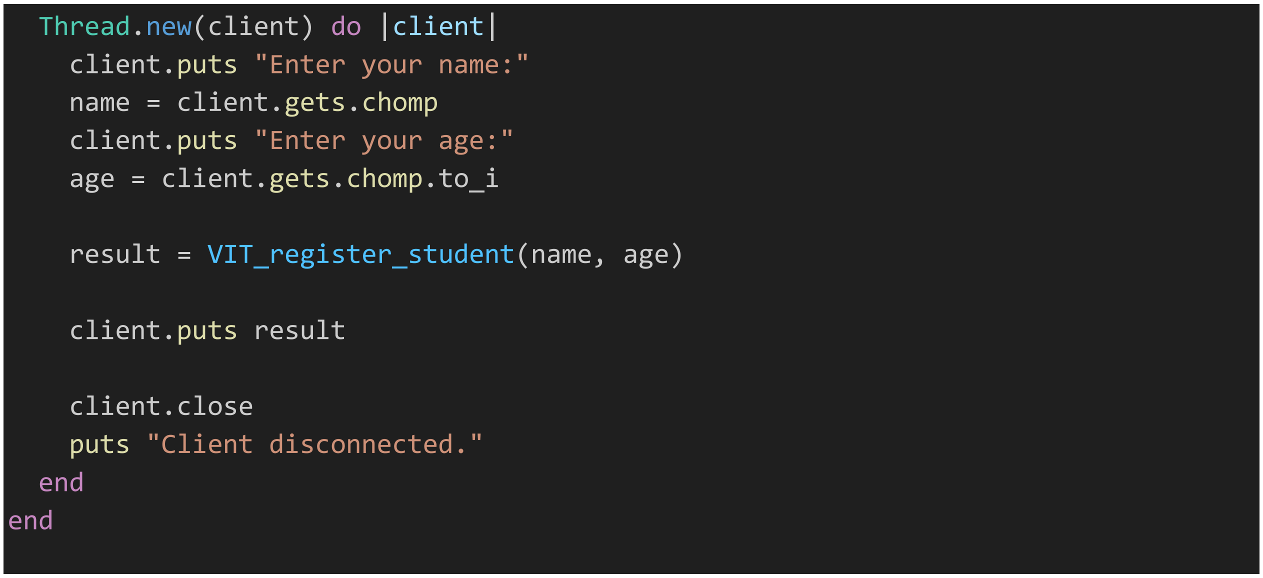
Multiple TCP:

Client.rb

```ruby
require 'socket'

client = TCPSocket.new('localhost', 2000)

puts client.gets.chomp
client.puts "Surya"
puts client.gets.chomp
client.puts 20

puts client.gets.chomp

client.close
puts "Connection closed."
```

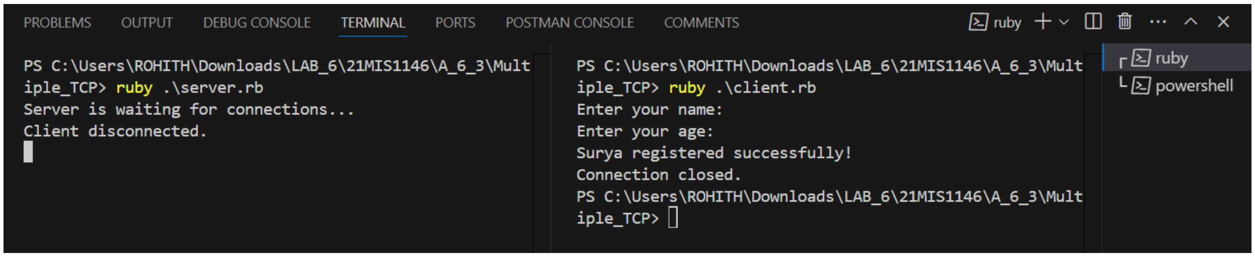
Server.rb

```ruby
require 'socket'
require 'thread'

def VIT_register_student(name, age)
  if age < 18
    return "Registration failed: Age must be 18 or older."
  else
    return "#{name} registered successfully!"
  end
end

server = TCPServer.new('localhost', 2000)
puts "Server is waiting for connections..."

loop do
  client = server.accept
```



```
  Thread.new(client) do |client|
    client.puts "Enter your name:"
    name = client.gets.chomp
    client.puts "Enter your age:"
    age = client.gets.chomp.to_i

    result = VIT_register_student(name, age)

    client.puts result

    client.close
    puts "Client disconnected."
  end
end
```

Output:



```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_3\Mult
iple_TCP> ruby .\server.rb
Server is waiting for connections...
Client disconnected.
```

```
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_3\Mult
iple_TCP> ruby .\client.rb
Enter your name:
Enter your age:
Surya registered successfully!
Connection closed.
PS C:\Users\ROHITH\Downloads\LAB_6\21MIS1146\A_6_3\Mult
iple_TCP>
```