Name : **Ritik Mandloi**

Roll No: **180101066**

INSTRUCTIONS FOR EXECUTION:

A) square_root.hs

1. Open terminal inside the 180101066_AssignIII folder.
2. Type : ghc square_root.hs
3. Type ./square_root <Number>
    Example: ./square_root 23.56

Also, I have provided 10 test cases in the 'square_root.sh' file.
You can run all the test cases in 'square_root.sh' file by using the command:

bash square_root.sh

B) fibonacci.hs

1. Open terminal inside the 180101066_AssignIII folder.
2. Type : ghc fibonacci.hs
3. Type ./fibonacci <Number>
    Example: ./fibonacci 200

Also, I have provided 10 test cases in the 'fibonacci.sh' file.
You can run all the test cases in 'fibonacci.sh' file by using the command:

bash fibonacci.sh

C) quick_sort.hs

1. Open terminal inside the 180101066_AssignIII folder.
2. Type : ghc quick_sort.hs
3. Type ./quick_sort <space separated list of numbers>
    Example: ./quick_sort 12 2 4 5 18

Also, I have provided 10 test cases in the 'quick_sort.sh' file.
You can run all the test cases in 'quick_sort.sh' file by using the command:

bash quick_sort.sh

I have provided the screenshots for better understanding of execution.

```
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ ghc square_root.hs
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ ./square_root 23.56
The Square Root of 23.56 is 4.85386
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ ghc fibonacci.hs
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ ./fibonacci 200
The 200th Fibonacci Number is 280571172992510140037611932413038677189525
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ ghc quick_sort.hs
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ ./quick_sort 12 2 4 5 18
[2,4,5,12,18]
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$
```

Running all the 10 test cases using the shell script.

```
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ bash square_root.sh
The Square Root of 23.56 is 4.85386
The Square Root of 1.0 is 1.0
The Square Root of 16.81 is 4.1
The Square Root of 4096.0 is 64.0
The Square Root of 46623.5632 is 215.9249
The Square Root of 0.0 is 0.0
The Square Root of 0.49 is 0.7
The Square Root of 0.1089 is 0.33
The Square Root of 3.565623232266556e13 is 5971283.97605
The Square Root of 1.2121545145435544e12 is 1100978.88924
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ bash fibonacci.sh
The 0th Fibonacci Number is 0
The 1th Fibonacci Number is 1
The 2th Fibonacci Number is 1
The 3th Fibonacci Number is 2
The 4th Fibonacci Number is 3
The 5th Fibonacci Number is 5
The 10th Fibonacci Number is 55
The 100th Fibonacci Number is 354224848179261915075
The 200th Fibonacci Number is 280571172992510140037611932413038677189525
The 500th Fibonacci Number is 139423224561697880139724382870407283950070256587697307264108962948325571622863290691557658876222521294125
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$ bash quick_sort.sh
[2,4,5,12,18]
[-1233,-500,-100,-96,-56,-45,1,2,3,6,9,18,50,140,200,500]
[-98,-54,-45,-5,1,2,2,2,3,3,4,4,4,5,5,5,5,5,6,6,12,32]
[-56,-22,1,2,2,5,23,30,32,42,45,46,52,54,56,192,499,504,524,565,948,5100]
[-3732,-366,-65,2,5,34,45,54,172,236,475,534,535,564,564,636,663,2524,4423,4635,6351,94538]
[-5894,-645,-495,29,43,49,49,59,86,95,146,182,289,352,389,598,895,895,896,998,1898,6462]
[-993299,-9265,-6256,-1982,-655,-332,2,15,37,46,46,59,63,95,351,413,598,882,919,968,969,5446,6541,6545,6554,9559,49859,54464,54532,65545,95949,98499,59989889]
[-196992,-6565,-5665,-3656,-565,-285,3,13,56,56,56,56,64,64,65,66,98,196,252,253,265,269,346,365,456,495,532,542,565,566,596,654,656,656,656,798,842,898,989,5326,5595,5659,5964,5966,6466,8985,9568,9648,38550,55100,58499,58504,98565,565656,596524,698659,895659,986565,5986565,9856569,56568956,599895659]
[-866956656,-484356625,-1865698,-649656,-86695,-35189,-99,-64,-6,3,4,4,4,5,6,6,6,7,7,9,9,11,26,45,49,56,56,56,59,59,64,65,68,79,84,94,94,98,229,265,461,464,565,565,646,646,649,776,989,4636,6265,6464,6565,6566,9563,17546,25289,26955,51549,55198,56569,89555,448787,586694,6168626,56545959,66456626,694491682,62822895656]
[-59989889,-4239859,-96265,-93219,-6595,-6541,-1655,265,359,466,637,3651,4163,6323,6882,22655,34966,54646,56298,63632,92368,93269,96559,132982,632256,5465457,5465464,5465532,6655545,9325949,9328499,23993299]
mandloi@mandloi-VirtualBox:~/Desktop/HASKELL$
```

***