

**1. Please mention group members names and UFID. Also write the steps to run your code.**

Name: Smrati Pandey

UFID: \*\*\*\*\*

Nidhi Sharma

UFID: \*\*\*\*\*

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Run the command: **mix run proj1.exs 100000 200000**

**2. The number of worker actors that you created.**

The number of workers will vary according to the range given.

For example, if the range is 1000 to 2000

Total number to be run by the system =  $2000 - 1000 = 1000$ , this will be divided in chunks of 10 and total number of workers created =  $(1000/10) = 100$

Total number of workers created for this scenario is 100.

**3. Size of the work unit of each worker actor that you determined results in best performance for your implementation and an explanation on how you determined it. Size of the work unit refers to the number of sub-problems that a worker gets in a single request from the boss.**

The size of the worker was determined on the bases of best distribution in the cores.

The best performance obtained (user+sys)/real. If the distribution is high then accordingly, we select the unit of worker module.

**4. The result of running your program for: mix run proj1.exs 100000 200000**

```
File Edit Selection View Go Debug Terminal Help
mix.exs - Untitled (Workspace) - Visual Studio Code

EXPLORER
  OPEN EDITORS
    mix.exs Elixir • project_vum
    proj1.exs Elixir • project_vum
  UNTITLED (WORKSPACE)
    Elixir
      cards
      New folder
      project
      project_vum
        mix.exs
        proj1.exs
        project1
      vampirenumber
      _build
      lib
        vampirenumber.ex
        Vampsupervisor.ex
      test
      .formatter.exs
      .gitignore
      mix.exs
      README.md
      project_vum.zip

Elixir > project_vum > mix.exs > ...
1 defmodule Proj1.MixProject do
2   use Mix.Project
3
4   def project do
5     [
6       app: :project_vum,
7       version: "0.0.1",
8       elixir: "~> 1.10",
9       deps: [
10        {:dep, "~> 0.0.1"}
11      ],
12       build_tools: [
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17      ],
18       test_dependencies: [
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21       docs: [
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24       assets: [
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```

105264 204 516  
105750 150 705  
108135 135 801  
110758 158 701  
115672 152 761  
116725 161 725  
117067 167 701  
118440 141 840  
120600 201 600  
123354 231 534  
124483 281 443  
125248 152 824  
125433 231 543  
125460 204 615 246 510  
125500 251 500  
126027 201 627  
126846 261 486  
129640 140 926  
129775 179 725  
131242 311 422  
132430 323 410  
133245 315 423  
134725 317 425  
135828 231 588  
135837 351 387  
136525 215 635  
136948 146 938  
140350 350 401  
145314 351 414  
146137 317 461  
146952 156 942  
150300 300 501  
152608 251 608  
152685 261 585  
153436 356 431  
156240 240 651  
156289 269 581  
156915 165 951  
162976 176 926  
163944 396 414  
172822 221 782  
173250 231 750  
174370 371 470  
175329 231 759  
180225 225 801  
180297 201 897  
182250 225 810  
182650 281 650  
186624 216 864  
190260 210 906  
192150 210 915  
193257 327 591  
193945 395 491

197725 275 719

5. Report the running time for the above problem (4). The ratio of CPU time to REAL TIME tells you how many cores were effectively used in the computation. If you are close to 1 you have almost no parallelism (points will be subtracted).

```
132430 323 410
133245 315 423
134725 317 425
135828 231 588
135837 351 387
136525 215 635
136948 146 938
140350 350 401
145314 351 414
146137 317 461
146952 156 942
150300 300 501
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152685 261 585
153436 356 431
156240 240 651
156289 269 581
156915 165 951
162976 176 926
163944 396 414
172822 221 782
173250 231 750
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180225 225 801
180297 201 897
182250 225 810
182650 281 650
186624 216 864
190260 210 906
192150 210 915
193257 327 591
193945 395 491
197725 275 719
```

```
real    0m7.592s
user    0m26.683s
sys     0m0.979s
project_vum $
```

Running time =  $(26.683 + 0.979) / 7.592 = 3.6436$  approx.

6. The largest problem you managed to solve (For example You can try finding out bigger vampire numbers than 200000).

The highest range achieved by the program is around 2500000

7. (Optional)- You could also inspect your code with observer (using- :observer.start) and attach a screenshot of CPU utilization chart.

