

IE 531 Programming Assignment 5
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The sample output obtained after running the commands as given in the problem description is as follows-

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Karthiks-MacBook-Pro:Debug karthikjvn$ ./PA5 50 1000 0.09 matrix_sketch1 matrix_sketch1_out
[Edo Liberty's Matrix Sketching Algorithm
-----
Original Data-Matrix has 50-rows & 1000-cols
Epsilon = 0.09 (i.e. max. of 9% reduction of Frobenius-Norm of the Sketch Matrix)
Input File = matrix_sketch1
Frobenius Norm of the (50 x 1000) Data Matrix = 12569.8
l= 23
Frobenius Norm of the (50 x 23) Sketch Matrix = 12374.6
Change in Frobenius-Norm between Sketch & Original = -1.55%
File 'matrix_sketch1_out' contains a (50 x 23) Matrix-Sketch
Karthiks-MacBook-Pro:Debug karthikjvn$ ./PA5 50 1000 0.1 matrix_sketch1 matrix_sketch1_out
[Edo Liberty's Matrix Sketching Algorithm
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Original Data-Matrix has 50-rows & 1000-cols
Epsilon = 0.1 (i.e. max. of 10% reduction of Frobenius-Norm of the Sketch Matrix)
Input File = matrix_sketch1
Frobenius Norm of the (50 x 1000) Data Matrix = 12569.8
l= 20
Frobenius Norm of the (50 x 20) Sketch Matrix = 12345.6
Change in Frobenius-Norm between Sketch & Original = -1.78%
File 'matrix_sketch1_out' contains a (50 x 20) Matrix-Sketch
Karthiks-MacBook-Pro:Debug karthikjvn$ ./PA5 9 329 0.2 Data x
[Edo Liberty's Matrix Sketching Algorithm
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Original Data-Matrix has 9-rows & 329-cols
Epsilon = 0.2 (i.e. max. of 20% reduction of Frobenius-Norm of the Sketch Matrix)
Input File = Data
Frobenius Norm of the (9 x 329) Data Matrix = 32803.6
l= 10
Frobenius Norm of the (9 x 9) Sketch Matrix = 32803.6
Change in Frobenius-Norm between Sketch & Original = 2.22e-14%
File 'x' contains a (9 x 9) Matrix-Sketch
Karthiks-MacBook-Pro:Debug karthikjvn$ █
```