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University of Information Technology & Sciences

# DSA-1 Assignment

Course Title : Data Structures and Algorithms

Course Code : CSE0613211

Topic : Time complexity graph

## Submitted to:

Teacher's Name : Faias Satter (FSC)

Designation : Lecturer

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Batch : 55

Department : CSE

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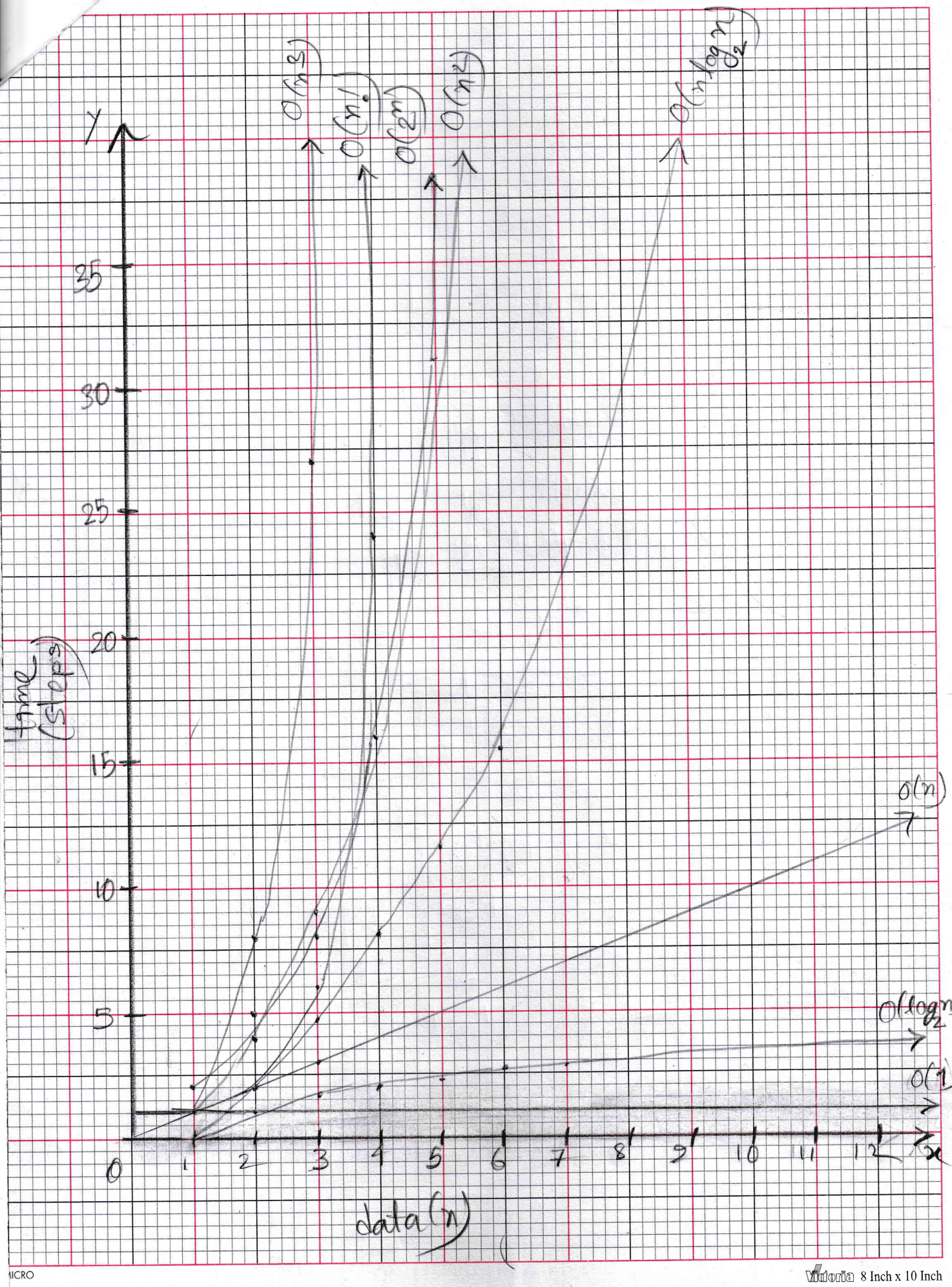
Roll No. .....




MICRO

Vidoria 8 Inch x 10 Inch

# DSA-1 Assignment

we need to plot the time complexity graph for $n, n^2, n^3, n!, 2^n, \log_2 n, n\log n$ and constant. To that end, first we choose co-ordinates $(x,y)$ as shown in the table and put them in the graph paper. Connecting the points should give us the desired graphs:

| x | g(x) or, O(x) or, y = g(x) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | n | $n^2$ | $n^3$ | $2^n$ | n! | $\log_2 n$ | $n\log_2 n$ |
| 1 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 0 |
| 2 | | 2 | 4 | 8 | 4 | 2 | 1 | 2 |
| 3 | | 3 | 9 | 27 | 8 | 6 | 1.58 | 4.75 |
| 4 | | 4 | 16 | 64 | 16 | 24 | 2 | 8 |
| 5 | | 5 | 25 | 125 | 32 | 120 | 2.32 | 11.6 |
| 6 | | 6 | 36 | 216 | 64 | 720 | 2.58 | 15.5 |
| 7 | | 7 | 49 | 343 | 128 | 5040 | 2.8 | 19.65 |
| 8 | | 8 | 64 | 512 | 256 | 40320 | 3 | 24 |
| 9 | | 9 | 81 | 729 | 512 | ... | 3.16 | 28.52 |
| 10 | | 10 | 100 | 1000 | 1024 | .... | 3.32 | 33.21 |