TASK 2

FINDING SPACE AND TIME COMPLEXITY

You have to find the time and space complexity of all the above listed algorithms

To write computation complexity we are assuming as,
n= number of data points,
d= number of dimensions of the data,
M=number of trees
#nodes=number of nodes=2n-1
Gamma m = output values for each leaf in decision trees
depth of tree = log n
n_{sv}=number of support vectors

$\|x\|0$ =non-missing entries in the training data

	Time Complexity	Space Complexity
LR Logistic Regression	***Train Time*** ***Complexity***=*O(nd)* **Test/Runtime** **Complexity**=*O(d)*	***During training***=*O(nd + n +d).* ***During Run Time***=*O(d)*

SVR	**Train Time Complexity=** $O(n^2d+n^3)$ **Test/Runtime Complexity=** $O(n_{sv}d)$	***Train space complexity =Test space complexity*** $O(n^2)$
RF	**Train time complexity**: O(M n logn d) **Test\Run time complexity** :O(M logn)	**Train space complexity** :O(#nodes M) **Test\Run space complexity** :O(#nodes M)
GB	***Train Time complexity =*** *O(M n logn d)* ***Run Time complexity=*** *O(M logn)*	***Train space complexity =Test space complexity:****O(#nodes M + gamma m)*
XgB	O(Md // x // 0logn).	***Train space complexity =Test space complexity:****O(#nodes M + gamma m)*