Syllabus for B.Tech (CSE) III YEAR II SEM
Computer Science and Engineering
Operating Systems and Machine Learning Lab

Code: 9EC65
Prerequisite: Programming Language

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0	0	3	1.5

Operating Systems Lab

Course objective:
Understand the design aspects of operating system concepts through simulation.

Course outcomes:
After completion of this course student will be able to:

1. Write a program to implement scheduling algorithms, Interprocess Communication, Deadlocks, Memory management and File allocation techniques.[L3]

Exercises

1. Simulate the following CPU scheduling algorithms (Preemptive, With Arrival Time)
a) FCFS b) SJF c) Priority d) Round Robin

2. Write C programs to illustrate the following IPC mechanisms
a) Pipes b) FIFOs c) Message Queues d) Shared Memory

3. Implement Bankers Algorithm for Deadlock Avoidance.

4. Develop programs for Paging Technique of memory management.
5. Simulate all page replacement algorithms
a) FIFO b) LRU c) LFU

6. Simulate all file allocation strategies
a) Sequential/Contiguous b) Indexed c) Linked

Machine Learning Lab

Course Objective:
Learn various machine learning techniques and able to demonstrate them using python.

Course Outcomes:
After completion of this course student will be able to:

1. Generalize complexity of Machine Learning algorithms and their limitations.[L2]
2. Apply common Machine Learning algorithms in practice and implement on their own.[L3]
3. Demonstrate experiments in Machine Learning using real-world data.[L3]

List of Experiments

1. The probability that it is Friday and that a student is absent is 3 %. Since there are 5 school days in a week, the probability that it is Friday is 20 %. What is the probability that a student is absent given that today is Friday? Apply Baye's rule in python to get the result. (Ans: 15%)
2. Extract the data from database using python
3. Implement k-nearest neighbours classification using python
4. Given the following data, which specify classifications for nine combinations of VAR1 and VAR2predict a classification for a case where VAR1=0.906 and VAR2=0.606, using the result of k-means clustering with 3 means (i.e., 3 centroids)

VAR1 VAR2 CLASS
1.713 1.586 0
0.180 1.786 1
0.353 1.240 1
0.940 1.566 0
1.486 0.759 1
1.266 1.106 0
1.540 0.419 1
0.459 1.799 1
0.773 0.186 1

5. The following training examples map descriptions of individuals onto high, medium and low credit-worthiness.

medium skiing design single twenties no ->highRisk
high golf trading married forties yes ->lowRisk
low speedway transport married thirties yes ->medRisk
medium football banking single thirties yes ->lowRisk
high flying media married fifties yes ->highRisk
low football security single twenties no ->medRisk
medium golf media single thirties yes ->medRisk
medium golf transport married forties yes ->lowRisk
high skiing banking single thirties yes ->highRisk
low golf unemployed married forties yes ->highRisk

Input attributes are (from left to right) income, recreation, job, status, age-group, home-owner. Find the unconditional probability of `golf' and the conditional probability of `single' given `medRisk' in the dataset?
6. Implement linear regression using python.
7. Implement Naïve Bayes theorem to classify the English text
8. Implement an algorithm to demonstrate the significance of genetic algorithm
9. Implement the finite words classification system using Back-propagation algorithm.
10. Implement Classification on a sample data set using SVM