Department of Computer Science and Business Systems

Academic Year 2023– 2024 (~~Odd~~/ Even Semester)

Degree, Semester & Branch: B.Tech, IV & CSBS
Course Code & Title: AL3452 & Operating Systems
Name of the Faculty member(s): Dr.M.Gomathy Nayagam

Innovative Practice Description

- **Unit/Topic:Unit III/ Page Replacement Algorithm**
- **Course Outcome:** CO3
- **Topic Learning Outcome:** UO3b
- **Activity Chosen: Problem Based Learning**
- **Justification:**

  Problem Based Learning (PBL) encourages active engagement, contextual learning, critical thinking, collaboration, theory application in practice, motivation, feedback, and equips students for real-world challenges in system design and management, it is a great fit for teaching page replacement algorithms in Operating Systems courses. When combined, these elements improve the relevance and efficacy of learning page replacement algorithms via problem-based learning methodologies.

- **Time Allotted for the Activity:**30 Minutes
- **Details of the Implementation:**
  - Course instructor explained the basic concept and he explained model of Page replacement algorithms with an example to the students for 20 Minutes in the class
  - After completion of the class, the course instructor gave the following problems to the students to solve it using linear regression model. The question for the problem is:

    "Consider the reference string 6, 1, 1, 2, 0, 3, 4, 6, 0, 2, 1, 2, 1, 2, 0, 3, 2, 1, 4, 0 for a memory with three frames and calculate number of page faults by using OPTIMAL Page replacement algorithms."
  - . Based on the knowledge gathered during the class, the students solved the problem and shown the answer to the course instructor separately. Students individually disclosed the result at each step. The course instructor verified that answer and he made correction to the students those who done the problem incorrectly.

- **CO–PO/ PSO mapping:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 3	3	3	3	-	-	-	-	1	1	1	-	1	1	1	-

(1– Low 2–Moderate 3 – High)

- **PO/ PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO8	PO9
	3	3	3	1	1
Justification for correlation	The students could be able to apply the basic engineering knowledge to use the various page replacement algorithms	The students could be able use the various page replacement algorithm with different case studies.	The students could able to provide the solution for identifying the relationship between various page replacement algorithms	The students could be able to solve the question without copying from others during the event.	The students can be able to discuss with their course instructor and solve their problem without any hesitation.

Innovative practice	PO10	PO12	PSO1	PSO2
	1	1	1	1
Justification for correlation	The students can be able to apply and solve the problem individually.	The students could be able to continuously learn about the page replacement algorithm.	The students could be able to apply the various page replacement algorithm during OS usage and iOS for the various services of OS	The students could be able to apply the various page replacement algorithm during OS usage and iOS for the various services of OS

- **Images/Screen shot of the practice:**

The sample photo copies of students' notebook (Ms.P.Keerthana, Ms.Harini and Ms. Haritha) are attached.

- **ReflectiveCritique:**
  - ***Feedbackofpracticefrom studentsandotherstakeholders:***
    Students are very much enjoyed and actively solved the problem with the discussion of both their peer students and course instructor.
  - ***Benefit of the Practice (E.g. Outcome Attainment would have increased due to innovative practice over conventional practice)***
    - It helps students to solve the real time problem using linear regression mathematically.
    - It helps the students to understand the importance of mathematical concept for building ML model.
    - It motivates the students to improve their critical thinking, problem solving and oral communication skills.
  - ***Challengesfacedinimplementation:***
    - Make all students to solve the problems
    - Make the students to answer the result of each student was difficult
    - Individual assessment/observation was difficult.

References:

- https://citl.illinois.edu/citl-101/teaching-learning/resources/teaching-strategies/problem-based-learning-(pbl)
- https://www.hunschool.org/resources/problem-based-learning
- Mr.K.VigneshSaravanan, "Standard Error Estimation" in course CS3352Foundation of Data Science,https://www.ritrjpm.ac.in/images/computer-science/2022-2023/3.KVS_Problem_based_Learning_FDS.pdf
- Ms.G.SakthiPriya, "Case Study-the Next Gen POS", in course CS8592 Object Oriented Analysis and Design, https://www.ritrjpm.ac.in/images/computer-science/2022-2023/1_GS_CS8592_problem_based_learning.pdf

Signature of Faculty Member **HOD**

(Dr.M.Gomathy Nayagam)