**Activity:**

**"Problem Solving using Flowcharts and Pseudocode"**

**Objective:**

The objective of this activity is to engage students in solving a real-world business problem using flowcharts and pseudocode. This activity will help students develop their problem-solving skills, algorithmic thinking, and computational logic.

**Instructions:**

**\*Problem Analysis (10 minutes):**

In their groups, students should discuss the problem and break it down into smaller tasks. They should **identify the inputs, processes, and outputs** involved in solving the problem. Encourage them to brainstorm ideas and outline the steps required to solve the problem.

**\*Pseudocode Writing (10 minutes):**

After completing their flowcharts, students should write pseudocode for their algorithms. Pseudocode should use a syntax that is easy to understand and closely resembles the flowchart they've created. Encourage them to include comments to explain their logic.

**\*Flowchart Design (10 minutes):**

Provide each group with a large sheet of paper or a digital drawing tool (e.g., a flowchart software program). Instruct them to create a flowchart that represents the algorithm for solving the business problem. Remind them to use appropriate flowchart symbols for processes, decisions, inputs, and outputs.

**\*Presentation (10 minutes):**

Each group should present their flowchart and pseudocode to the class. They should explain their approach, the logic behind their solution, and any challenges they encountered. Encourage questions and discussions from the class.

**Problems:**

**Problem Group 1:**

"A small online clothing store needs to automate its inventory management. They want a system that can track inventory levels, generate alerts when items are low in stock, and reorder products automatically when necessary."

**Problem Group 2:**

"A retail company operates multiple warehouses and needs to optimize its transportation routes for delivering products to retail stores. The goal is to minimize transportation costs while ensuring timely delivery to all stores."

**Problem Group 3:**

"A university needs to optimize course scheduling for the upcoming semester. The goal is to minimize conflicts in students' course schedules, allocate classrooms efficiently, and manage waitlists effectively."

**Problem Group 4:**

“A hotel chain needs to optimize staff shift scheduling to meet guest demand while controlling labor costs. Create an algorithm that assigns employees to shifts, taking into account factors like workload, employee availability, and labor regulations”

**Problem Group 5:**

“A telecommunications company receives a high volume of customer service calls daily. Develop an algorithm that routes customer calls to the most suitable service agents based on the nature of the inquiry, agent expertise, and call queue length.”

**Problem Group 6:**

"A university's enrollment system needs to handle course prerequisites efficiently. Students should only be allowed to enroll in courses if they have completed the necessary prerequisites. Design an algorithm to check and enforce these prerequisites during enrollment.

**Problem Group 7:**

"A manufacturing company wants to streamline its production process by optimizing the scheduling of production runs and machine usage. Design an algorithm that schedules production orders to maximize throughput and minimize idle time for machines.”

**Problem Group 8:**

"A university wants to improve its waitlist management system. Develop an algorithm to prioritize and automatically enroll students from the waitlist when spots become available in a course, considering factors like seniority, major, and time of registration.

Extra: “A marketing agency is managing multiple clients' advertising campaigns across various platforms (e.g., social media, search engines). Develop an algorithm that optimizes the allocation of advertising budgets to maximize the return on investment (ROI) for each client.”