**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“JnanaSangama”, Belgaum -590014, Karnataka.**

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**LAB REPORT**

**on**

**Artificial Intelligence (23CS5PCAIN)**

***Submitted by***

**Subramanya J (1BM23CS343)**

***in partial fulfillment for the award of the degree of***

**BACHELOR OF ENGINEERING**

***in***

**COMPUTER SCIENCE AND ENGINEERING**

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**B.M.S. COLLEGE OF ENGINEERING**

**(Autonomous Institution under VTU)**

**BENGALURU-560019**

**Aug 2025 to Dec 2025**

**B.M.S. College of Engineering,**

**Bull Temple Road, Bangalore 560019**

(Affiliated To Visvesvaraya Technological University, Belgaum)

**Department of Computer Science and Engineering**

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**CERTIFICATE**

This is to certify that the Lab work entitled “Artificial Intelligence (23CS5PCAIN)” carried out by **Subramanya J (1BM23CS343),** who is bonafide student of **B.M.S. College of Engineering.** It is in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum. The Lab report has been approved as it satisfies the academic requirements in respect of an Artificial Intelligence (23CS5PCAIN) work prescribed for the said degree.

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Github Link:

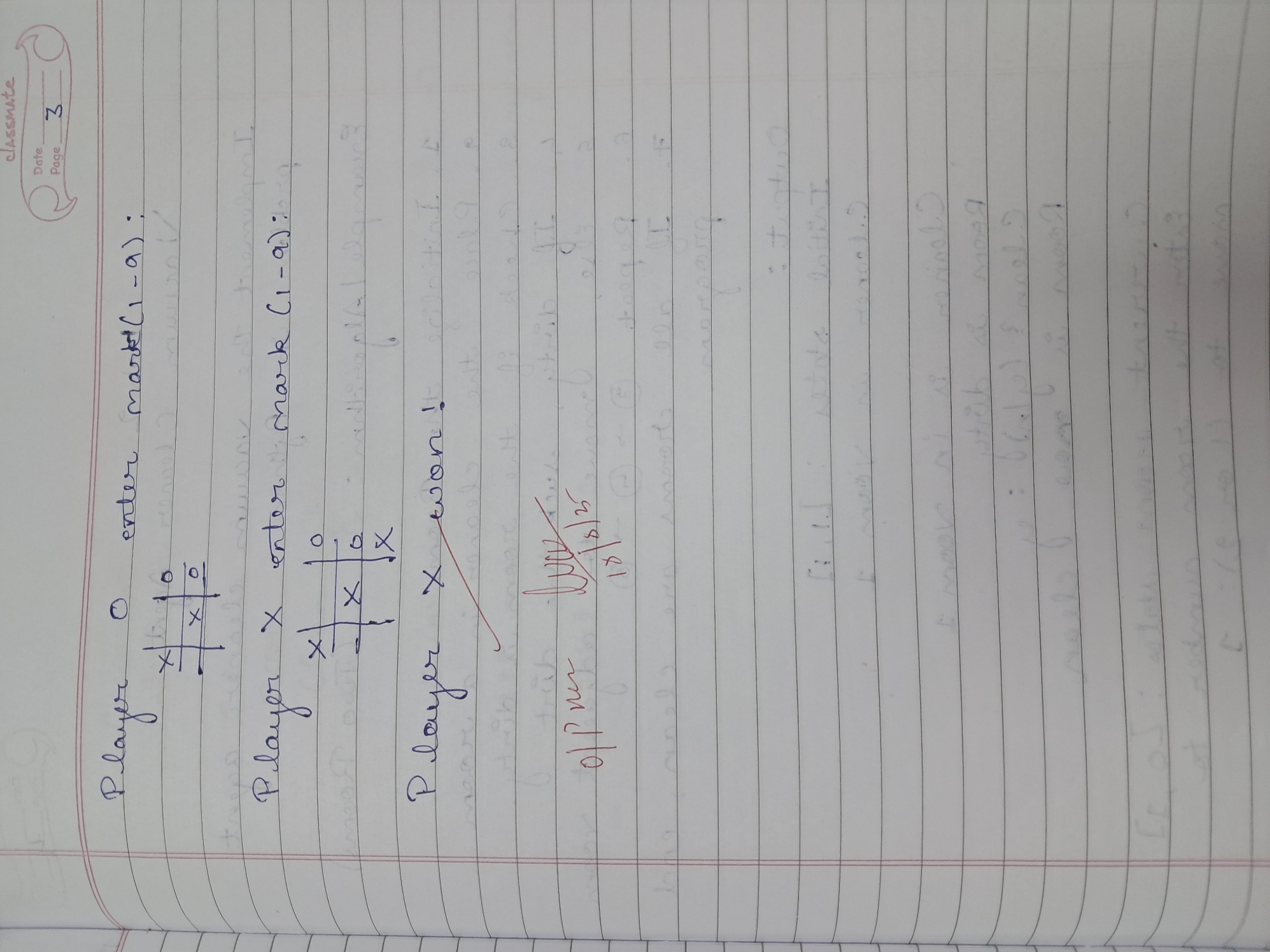
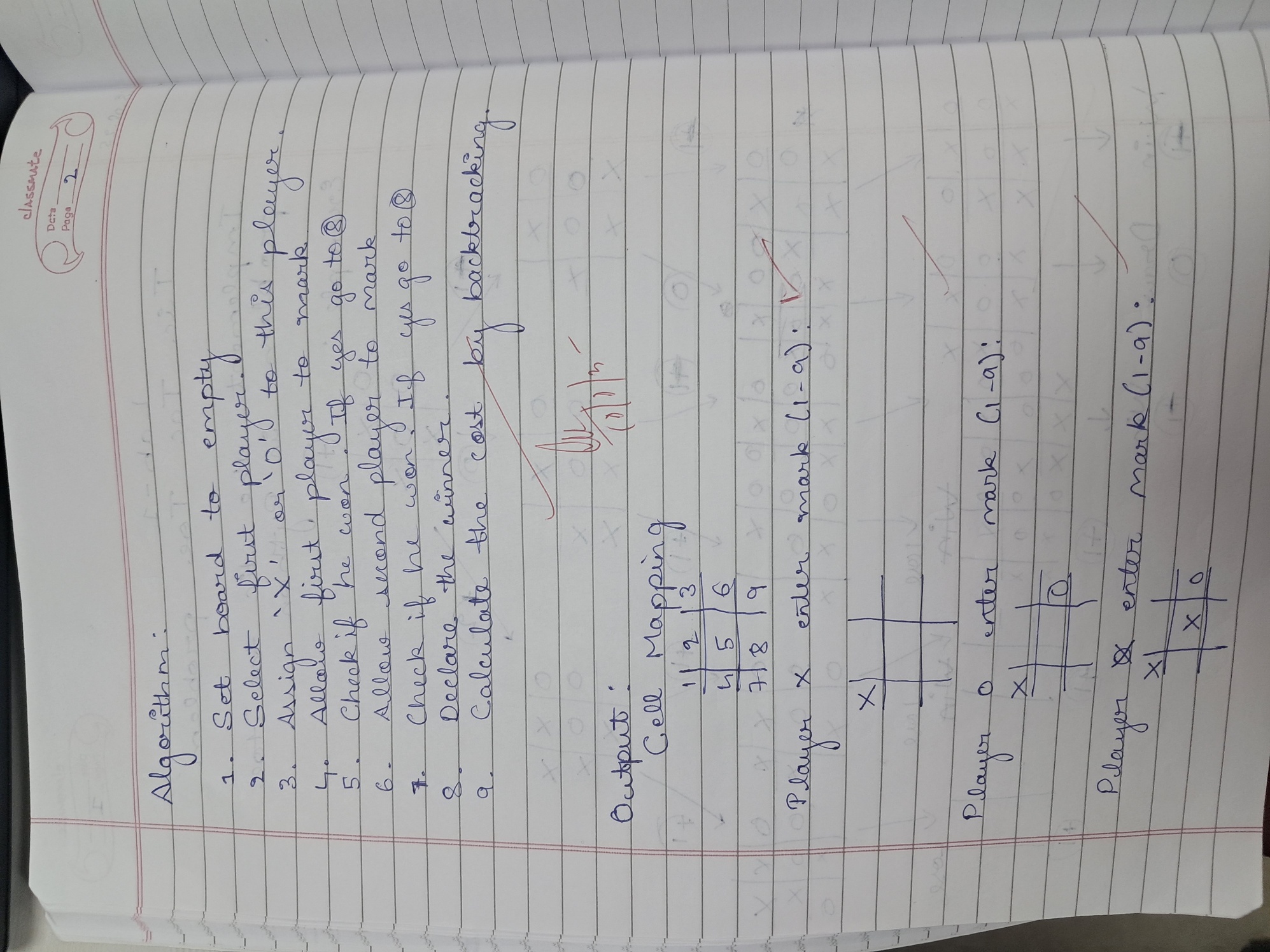
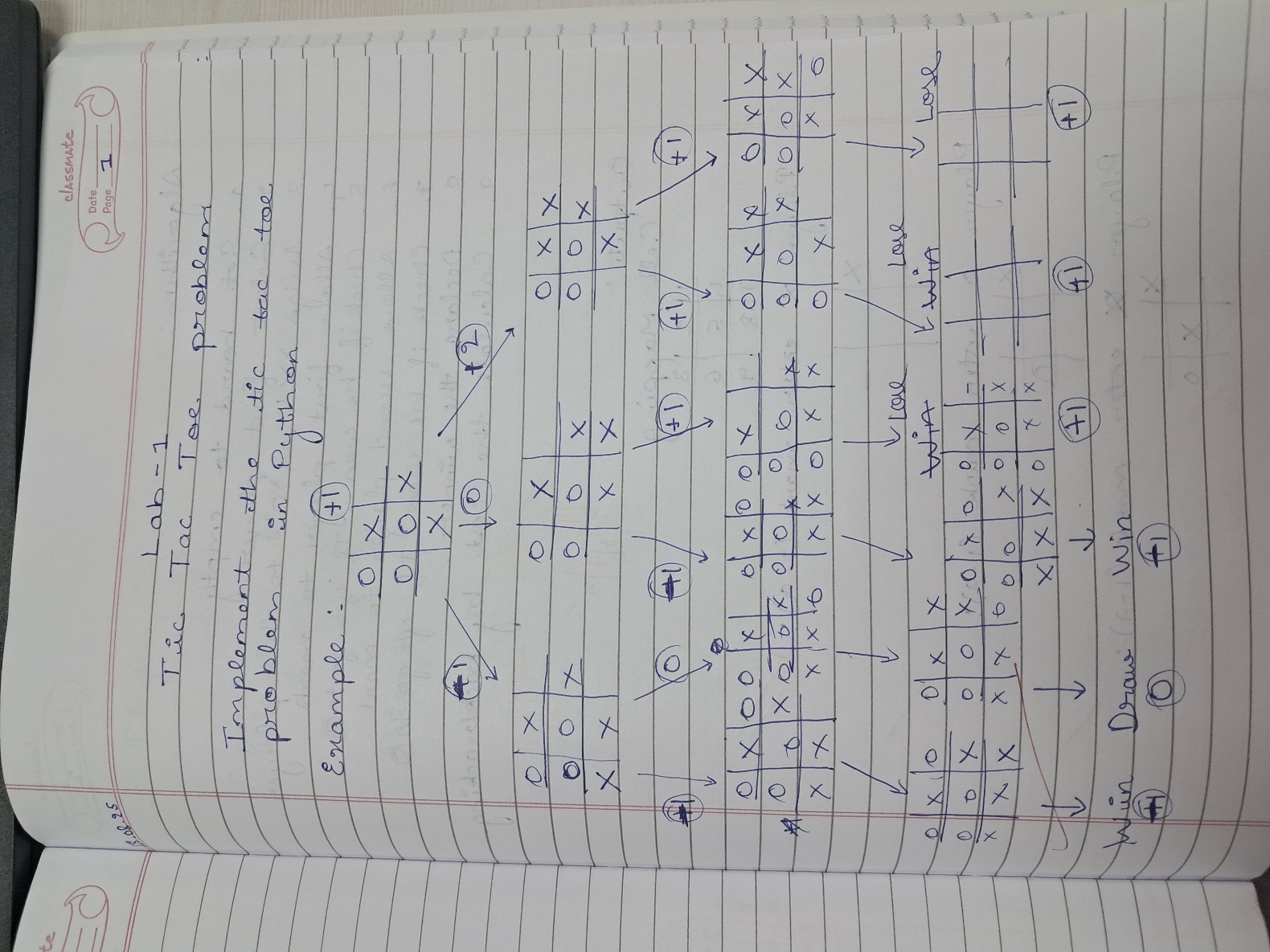
<https://github.com/SubramanyaJ/23CS5PCAIN>

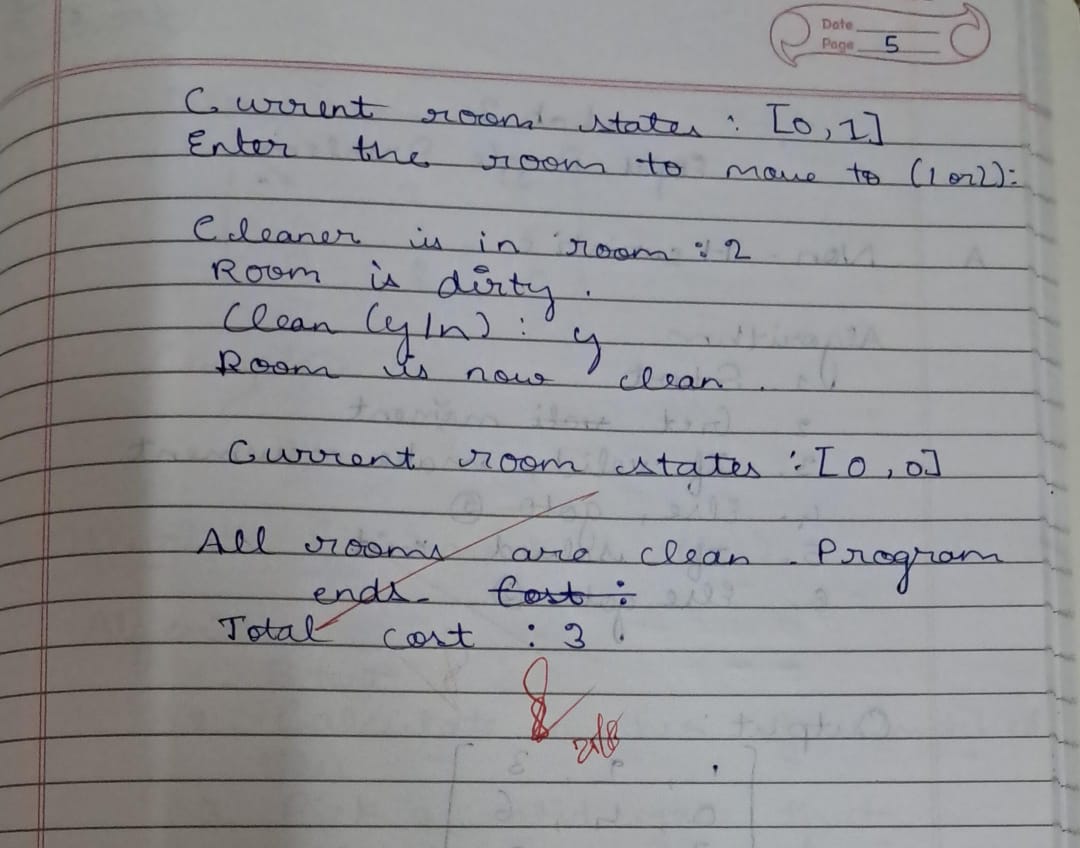
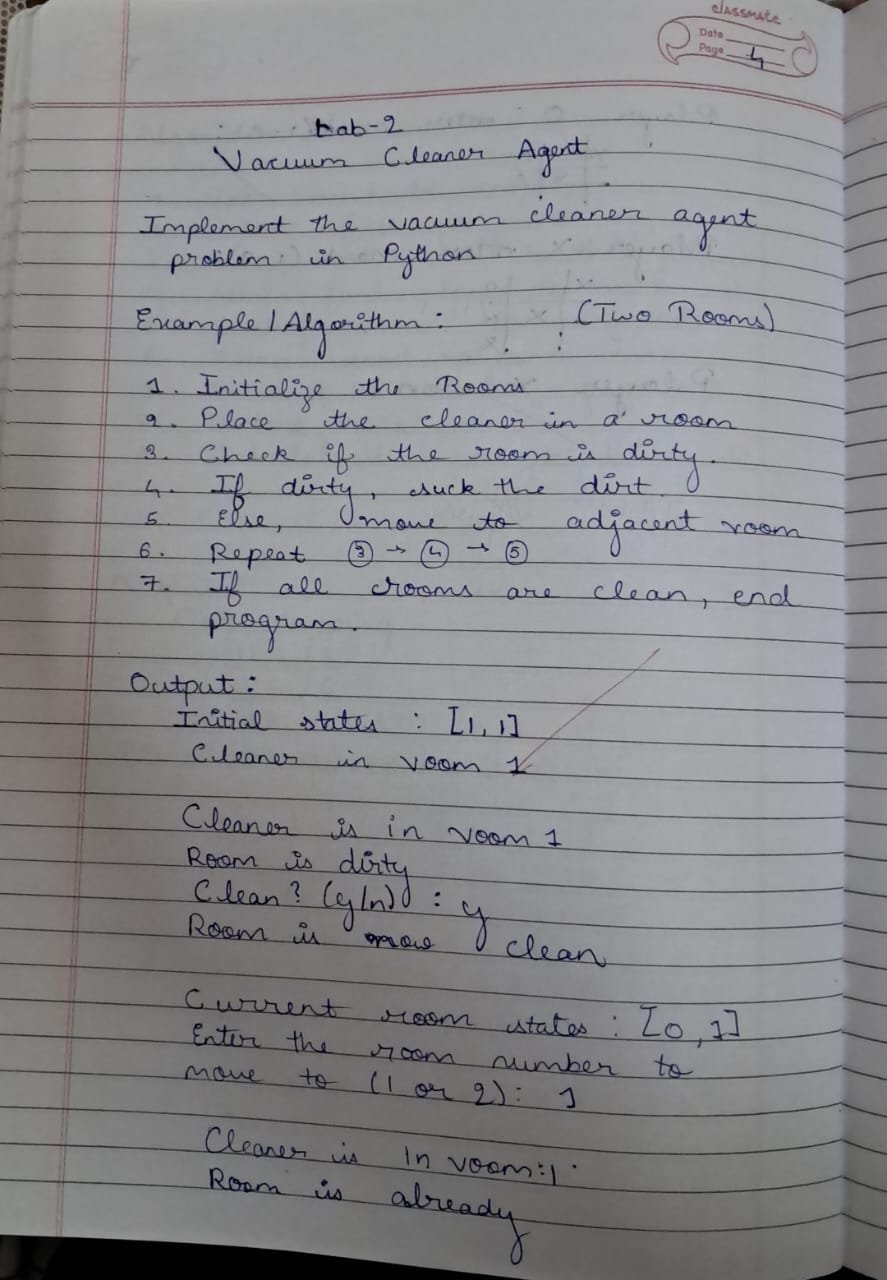
**Program 1**

Implement Tic –Tac –Toe Game

Implement Vacuum Cleaner agent

Algorithm:





Code:

def print\_board(board):

for row in board:

print(" | ".join(row))

print("-" \* 9)

def print\_cell\_mapping():

mapping = [

"1 | 2 | 3",

"- - - - - - -",

"4 | 5 | 6",

"- - - - - - -",

"7 | 8 | 9"

]

print("\nCell Mapping:")

for line in mapping:

print(line)

print()

def check\_winner(board):

for i in range(3):

if board[i][0] == board[i][1] == board[i][2] != " ":

return board[i][0]

if board[0][i] == board[1][i] == board[2][i] != " ":

return board[0][i]

if board[0][0] == board[1][1] == board[2][2] != " ":

return board[0][0]

if board[0][2] == board[1][1] == board[2][0] != " ":

return board[0][2]

return None

def is\_board\_full(board):

return all(cell != " " for row in board for cell in row)

def tic\_tac\_toe():

board = [[" " for \_ in range(3)] for \_ in range(3)]

current\_player = "X"

print\_cell\_mapping()

while True:

print\_board(board)

move = int(input(f"Player {current\_player}, enter the cell number (1-9): ")) - 1

row, col = divmod(move, 3)

if 0 <= move < 9 and board[row][col] == " ":

board[row][col] = current\_player

else:

print("Invalid move! Try again.")

continue

winner = check\_winner(board)

if winner:

print\_board(board)

print(f"Player {winner} wins!")

break

if is\_board\_full(board):

print\_board(board)

print("It's a draw!")

break

current\_player = "O" if current\_player == "X" else "X"

tic\_tac\_toe()