

3101047

LP2 AI Assignment 1

DFS Code:

```
import itertools
def dfsalgo(childtree, openlist, closelist,goal):
    X=openlist[0]
    print("\n\n X = {}".format(X))
    closelist.append(X)
    for i in range(len(childtree)):
        if(X==childtree[i][0]):
            openlist.insert(0,childtree[i][1:])
            openlist=list(itertools.chain(*openlist))
            openlist.remove(X)
        if(X!=goal):
            print("\n OPEN {} CLOSE {}".format(openlist,closelist))
            if(X==goal):
                print("\n SUCCESS")
            elif(len(openlist)>0):
                dfsalgo(childtree, openlist, closelist,goal)
            else:print("\n\n FAILURE")
    def createTree(roottree, treelength):
        try:
            for i in range(treelength):
                childtree[i].append(roottree[i+1])
                checkchild=input("\n Does "+roottree[i+1]+" has any child node Press n for no : ")
                if(checkchild=='n'):
                    print()
                else:
                    checkchildssibling=""
                    while(checkchildssibling!='n'):
                        childname=input("\n Enter child node : ")
                        childtree[i].append(childname)
                        checkchildssibling = input("\n Does "+roottree[i+1]+" has any other children
Press n for no: ")
                except IndexError:
                    pass
        roottree=[]
        root=input("Enter the root node : ")
        roottree.append(root)
        checkchild=input("\n Does "+root+" has any child node Press n for no : ")
        if(checkchild=='n'):
            print(roottree)
```

```

else:
    checkchild sibling=""
    while(checkchild sibling!="n"):
        childname=input("\n Enter child node : ")
        roottree.append(childname)
        checkchild sibling = input("\n Does "+root+" has any other child Press n for no : ")
    treelength=len(roottree)
    childtree=[[] for x in range(treelength-1)]
    createTree(roottree,treelength)
    print("\n\n Tree successfully created root node wtih children\n")
    print(roottree)
    print("\n\n Children with their children and siblings \n")
    print(childtree)
    goal=input("\n Enter the goal node : ")
    openlist=[]
    closelist=[]
    X=roottree[0]
    print("\n\n X = "+X)
    openlist.append(roottree[1:])
    openlist=list(itertools.chain(*openlist))
    closelist.append(X)
    print("\nOPEN {} CLOSE {}".format(openlist,closelist))

```

DFS O/P:

```

Enter the root node : a
Does a has any child node Press n for no : y
Enter child node : b
Does a has any other child Press n for no : y
Enter child node : c
Does a has any other child Press n for no : n
Does b has any child node Press n for no : y
Enter child node : d
Does b has any other children Press n for no: n
Does c has any child node Press n for no : y
Enter child node : e
Does c has any other children Press n for no: n

Tree successfully created root node wtih children
['a', 'b', 'c']

Children with their children and siblings
[['b', 'd'], ['c', 'e']]
Enter the goal node : e

X = a
OPEN ['b', 'c'] CLOSE ['a']

```

BFS Code:

```
import itertools
```

```
def bfsalgo(childtree, openlist, closelist,goal):
    """Implementation of BFS algo"""
    X=openlist[0]
    print("\n\n X = {} ".format(X))
    closelist.append(X)
    for i in range(len(childtree)):

        if(X==childtree[i][0]):
            openlist.append(childtree[i][1:])

    openlist=list(itertools.chain(*openlist))
    del openlist[0]

    if(X!=goal):
        print("\n OPEN {}     CLOSE {}".format(openlist,closelist))

    if(X==goal):
        print("\n SUCCESS")
    elif(len(openlist)>0):
        bfsalgo(childtree, openlist, closelist,goal)
    else:
        print("\n\n FAILURE")
```

```
def createTree(treearr, treelength):
    """Creating a child's child tree"""
    try:
        for i in range(treelength):
            childtree[i].append(treearr[i+1])
            checkchild=input("\n Does "+treearr[i+1]+" has any child node Press n
for no :")
            if(checkchild=='n'):
                print()
            else:
                checkchild=sibling=""
                while(checkchild!=n'):
                    childname=input("\n Enter child node : ")
                    """)
```

```

        childtree[i].append(childname)

        checkchild sibling = input("\n Does "+treearr[i+1]+" has
any other children Press n for no :   ")
        except IndexError:
            pass

treearr=[]
root=input("Enter the root node :   ")

treearr.append(root)

checkchild=input("\n Does "+root+" has any child node Press n for no :   ")
if(checkchild=='n'):
    print(treearr)

else:
    checkchild sibling=""
    while(checkchild sibling!="n"):

        childname=input("\n Enter child node :   ")

        treearr.append(childname)

        checkchild sibling = input("\n Does "+root+" has any other child Press n for no
:   ")

treelength=len(treearr)
childtree=[[ ] for x in range(treelength-1)]
createTree(treearr,treelength)

print("\n\n Tree successfully created root node wtih children\n")
print(treearr)

print("\n\n Children with their children and siblings \n")
print(childtree)

goal=input("\n Enter the goal node : ")

openlist=[]
closelist=[]

X=treearr[0]
print("\n\n X = "+X)

```

```

openlist.append(treearr[1:])
openlist=list(itertools.chain(*openlist))
closelist.append(X)
print("\nOPEN {}      CLOSE {}".format(openlist,closelist))

```

```
bfsalgo(childdtree,openlist,closelist,goal)
```

BFS O/P:

```

Enter the root node : s
Does s has any child node Press n for no : y
Enter child node : a
Does s has any other child Press n for no : y
Enter child node : b
Does s has any other child Press n for no : n
Does a has any child node Press n for no : y
Enter child node : c
Does a has any other children Press n for no : n
Does b has any child node Press n for no : y
Enter child node : d
Does b has any other children Press n for no : y
Enter child node : e
Does b has any other children Press n for no : n

Tree successfully created root node wtih children
['s', 'a', 'b']

Children with their children and siblings

```

```

Tree successfully created root node wtih children
['s', 'a', 'b']

Children with their children and siblings
[['a', 'c'], ['b', 'd', 'e']]
Enter the goal node : e

X = s
OPEN ['a', 'b'] CLOSE ['s']

X = a
OPEN ['c', 'b']      CLOSE ['s', 'a']

X = c
OPEN ['b']      CLOSE ['s', 'a', 'c']

X = b
OPEN ['d', 'e']      CLOSE ['s', 'a', 'c', 'b']

X = d
OPEN ['e']      CLOSE ['s', 'a', 'c', 'b', 'd']

X = e
SUCCESS

```

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LP2 AI Assignment 2

A* Code:

```
from copy import deepcopy
import numpy as np
import time

def bestsolution(state):
    bestsol = np.array([], int).reshape(-1, 9)
    count = len(state) - 1
    while count != -1:
        bestsol = np.insert(bestsol, 0, state[count]['puzzle'], 0)
        count = (state[count]['parent'])
    return bestsol.reshape(-1, 3, 3)

def all(checkarray):
    set=[]
    for it in set:
        for checkarray in it:
            return 1
    else:
        return 0

def manhattan(puzzle, goal):
    a = abs(puzzle // 3 - goal // 3)
    b = abs(puzzle % 3 - goal % 3)
    mhcost = a + b
    return sum(mhcost[1:])

def misplaced_tiles(puzzle,goal):
    mscost = np.sum(puzzle != goal) - 1
    return mscost if mscost > 0 else 0

def coordinates(puzzle):
    pos = np.array(range(9))
    for p, q in enumerate(puzzle):
        pos[q] = p
    return pos
```

```

def evaluvate(puzzle, goal):
    steps = np.array([('up', [0, 1, 2], -3), ('down', [6, 7, 8], 3), ('left', [0, 3, 6], -1), ('right', [2, 5, 8], 1)],
    dtype = [('move', str, 1), ('position', list), ('head', int)])
    dtstate = [('puzzle', list), ('parent', int), ('gn', int), ('hn', int)]
    costg = coordinates(goal)
    parent = -1
    gn = 0
    hn = manhattan(coordinates(puzzle), costg)
    state = np.array([(puzzle, parent, gn, hn)], dtstate)
    dtpriority = [('position', int), ('fn', int)]
    priority = np.array([(0, hn)], dtpriority)
    while 1:
        priority = np.sort(priority, kind='mergesort', order=['fn', 'position'])
        position, fn = priority[0]
        priority = np.delete(priority, 0, 0)
        puzzle, parent, gn, hn = state[position]
        puzzle = np.array(puzzle)
        blank = int(np.where(puzzle == 0)[0])
        gn = gn + 1
        c = 1
        start_time = time.time()
        for s in steps:
            c = c + 1
            if blank not in s['position']:
                openstates = deepcopy(puzzle)
                openstates[blank], openstates[blank + s['head']] = openstates[blank + s['head']], openstates[blank]
                if ~(np.all(list(state['puzzle']) == openstates, 1)).any():
                    end_time = time.time()
                    if ((end_time - start_time) > 2):
                        print(" The 8 puzzle is unsolvable ! \n")
                        exit
                    hn = manhattan(coordinates(openstates), costg)
                    q = np.array([(openstates, position, gn, hn)], dtstate)
                    state = np.append(state, q, 0)
                    fn = gn + hn
                    q = np.array([(len(state) - 1, fn)], dtpriority)
                    priority = np.append(priority, q, 0)
                    if np.array_equal(openstates, goal):
                        print(' The 8 puzzle is solvable ! \n')
                        return state, len(priority)
    return state, len(priority)

```

```

def evaluvate_misplaced(puzzle, goal):
    steps = np.array([('up', [0, 1, 2], -3), ('down', [6, 7, 8], 3), ('left', [0, 3, 6], -1), ('right', [2, 5, 8], 1)], 
                    dtype=[('move', str, 1), ('position', list), ('head', int)])
    dtstate = [('puzzle', list), ('parent', int), ('gn', int), ('hn', int)]
    costg = coordinates(goal)
    parent = -1
    gn = 0
    hn = misplaced_tiles(coordinates(puzzle), costg)
    state = np.array([(puzzle, parent, gn, hn)], dtstate)
    dtpriority = [('position', int), ('fn', int)]
    priority = np.array([(0, hn)], dtpriority)
    while 1:
        priority = np.sort(priority, kind='mergesort', order=['fn', 'position'])
        position, fn = priority[0]
        priority = np.delete(priority, 0, 0)
        puzzle, parent, gn, hn = state[position]
        puzzle = np.array(puzzle)
        blank = int(np.where(puzzle == 0)[0])
        gn = gn + 1
        c = 1
        start_time = time.time()
        for s in steps:
            c = c + 1
            if blank not in s['position']:
                openstates = deepcopy(puzzle)
                openstates[blank], openstates[blank + s['head']] = openstates[blank + s['head']], openstates[blank]
                if ~(np.all(list(state['puzzle']) == openstates, 1)).any():
                    end_time = time.time()
                    if ((end_time - start_time) > 2):
                        print(" The 8 puzzle is unsolvable \n")
                        break
                    hn = misplaced_tiles(coordinates(openstates), costg)
                    q = np.array([(openstates, position, gn, hn)], dtstate)
                    state = np.append(state, q, 0)
                    fn = gn + hn
                    q = np.array([(len(state) - 1, fn)], dtpriority)
                    priority = np.append(priority, q, 0)
                    if np.array_equal(openstates, goal):
                        print(' The 8 puzzle is solvable \n')
                        return state, len(priority)

```

```

return state, len(priority)

puzzle = []
print(" Input vals from 0-8 for start state ")
for i in range(0,9):
    x = int(input("enter vals :"))
    puzzle.append(x)

goal = []
print(" Input vals from 0-8 for goal state ")
for i in range(0,9):
    x = int(input("Enter vals :"))
    goal.append(x)
n = int(input("1. Manhattan distance \n2. Misplaced tiles"))
if(n ==1 ):
    state, visited = evaluvate(puzzle, goal)
    bestpath = bestsolution(state)
    print(str(bestpath).replace('[', ' ').replace(']', ''))
    totalmoves = len(bestpath) - 1
    print('Steps to reach goal:',totalmoves)
    visit = len(state) - visited
    print('Total nodes visited: ',visit, "\n")
    print('Total generated:', len(state))
if(n == 2):
    state, visited = evaluvate_misplaced(puzzle, goal)
    bestpath = bestsolution(state)
    print(str(bestpath).replace('[', ' ').replace(']', ''))
    totalmoves = len(bestpath) - 1
    print('Steps to reach goal:',totalmoves)
    visit = len(state) - visited
    print('Total nodes visited: ',visit, "\n")
    print('Total generated:', len(state))

```

A* O/P:

```
Input vals from 0-8 for start state
```

```
enter vals :1
```

```
enter vals :0
```

```
enter vals :3
```

```
enter vals :4
```

```
enter vals :2
```

```
enter vals :6
```

```
enter vals :7
```

```
enter vals :5
```

```
enter vals :8
```

```
Input vals from 0-8 for goal state
```

```
Enter vals :1
```

```
Enter vals :2
```

```
Enter vals :3
```

```
Enter vals :4
```

```
Enter vals :5
```

```
Enter vals :6
```

```
Enter vals :7
```

```
Enter vals :8
```

```
Enter vals :0
```

```
1. Manhattan distance
```

```
2. Misplaced tiles
```

```
The 8 puzzle is solvable
```

```
1 0 3  
4 2 6  
7 5 8
```

```
1 2 3  
4 0 6  
7 5 8
```

```
1 2 3  
4 5 6  
7 0 8
```

```
1 2 3  
4 5 6  
7 8 0
```

```
Steps to reach goal: 3
```

```
Total nodes visited: 3
```

```
Total generated: 9
```

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LP2 AI Assignment 4

NQ Backtracking Code:

```
from typing import List
boardcount=0
def isboardok(chessboard:List,row:int,col:int):
    for c in range(col):
        if(chessboard[row][c]=='Q'):
            return False
    for r,c in zip(range(row-1,-1,-1),range(col-1,-1,-1)):
        if(chessboard[r][c]=='Q'):
            return False
    for r,c in zip(range(row+1,len(chessboard),1),range(col-1,-1,-1)):
        if(chessboard[r][c]=='Q'):
            return False
    return True
```

```
def displayboard(chessboard:List):
    for row in chessboard:
        print(row)
    print()
```

```
def placenqueens(chessboard:List,col:int):
    global boardcount
    if(col>=len(chessboard)):
        boardcount+=1
        print("Board"+str(boardcount))
        print("====")
        displayboard(chessboard)
        print("=====\n\n")
    else:
        for row in range(len(chessboard)):
            chessboard[row][col]='Q'
            if(isboardok(chessboard,row,col)==True):
                placenqueens(chessboard,col+1)
                chessboard[row][col]='.'
```

```
chessboard=[]
N=int(input("Enter chessboard size: "))
for i in range(N):
```

```

row=["."]*N
chessboard.append(row)

placenqueens(chessboard,0)

```

NQ Backtracking O/P:

```

Enter chessboard size: 4
Board1
=====
[ '.', '.', 'Q', '.' ]
[ 'Q', '.', '.', '.' ]
[ '.', '.', '.', 'Q' ]
[ '.', 'Q', '.', '.' ]

=====
Board2
=====
[ '.', 'Q', '.', '.' ]
[ '.', '.', '.', 'Q' ]
[ 'Q', '.', '.', '.' ]
[ '.', '.', 'Q', '.' ]

=====
```

NQ Branch and Bound Code:

```

def printSolution(board):
    for i in range(N):
        for j in range(N):
            print(board[i][j], end = " ")
        print()

def isSafe(row, col, nd, rd, rowLookup, ndLookup, rdLookup):
    if (ndLookup[nd[row][col]] or rdLookup[rd[row][col]] or rowLookup[row]):
        return False
    return True

def solveNQueensUtil(board, col, nd, rd, rowLookup, ndLookup, rdLookup):
    if(col >= N):
        return True
    for i in range(N):
        if(isSafe(i, col, nd, rd, rowLookup, ndLookup, rdLookup)):

            board[i][col] = 1
            rowLookup[i] = True
            ndLookup[nd[i][col]] = True

```

```

rdLookup[rd[i][col]] = True

if(solveNQueensUtil(board, col + 1,nd, rd,rowLookup, ndLookup,rdLookup)):
    return True
board[i][col] = 0
rowLookup[i] = False
ndLookup[nd[i][col]] = False
rdLookup[rd[i][col]] = False
return False

def solveNQueens(N):

    board = [[0 for i in range(N)] for j in range(N)]

    nd = [[0 for i in range(N)] for j in range(N)]
    rd = [[0 for i in range(N)] for j in range(N)]
    rowLookup = [False] * N

    x = 2 * N - 1
    ndLookup = [False] * x
    rdLookup= [False] * x

    for r in range(N):
        for c in range(N):
            nd[r][c] = r + c
            rd[r][c] = r - c + N - 1

    if(solveNQueensUtil(board, 0, nd, rd, rowLookup, ndLookup,rdLookup) == False):
        print("Solution does not exist")
        return False

    printSolution(board)
    return True

N=int(input("Enter a Number: "))
solveNQueens(N)

```

NQ Branch and Bound O/P:

```
Enter a Number: 8
1 0 0 0 0 0 0 0
0 0 0 0 0 1 0
0 0 0 0 1 0 0 0
0 0 0 0 0 0 1
0 1 0 0 0 0 0 0
0 0 0 1 0 0 0 0
0 0 0 0 0 1 0 0
0 0 1 0 0 0 0 0
```

```
Enter a Number: 4
0 0 1 0
1 0 0 0
0 0 0 1
0 1 0 0
```

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LP2 AI Assignment 5

ChatBot Code and Output:

```
pip install chatterbot
Collecting chatterbot
  Downloading ChatterBot-1.0.8-py2.py3-none-any.whl (63 kB)
[██████████] 63 kB 1.8 MB/s
Requirement already satisfied: pytz in /usr/local/lib/python3.7/dist-packages (from
chatterbot)Collecting sqlalchemy<1.4,>=1.3
  Downloading SQLAlchemy-1.3.24-cp37-cp37m-manylinux2010_x86_64.whl (1.3 MB)
[██████████] 1.3 MB 15.7 MB/s
Collecting mathparse<0.2,>=0.1
  Downloading mathparse-0.1.2-py3-none-any.whl (7.2 kB)
Requirement already satisfied: python-dateutil<2.9,>=2.8 in
/usr/local/lib/python3.7/dist-packsRequirement already satisfied: six>=1.5 in
/usr/local/lib/python3.7/dist-packages (from pythonInstalling collected packages:
sqlalchemy, mathparse, chatterbot
Attempting uninstall: sqlalchemy
Found existing installation: SQLAlchemy 1.4.35
Uninstalling SQLAlchemy-1.4.35:
Successfully uninstalled SQLAlchemy-1.4.35
Successfully installed chatterbot-1.0.8 mathparse-0.1.2 sqlalchemy-1.3.24
```

```
from chatterbot import ChatBot
from chatterbot.trainers import ListTrainer

bot = ChatBot('Bot')
chatbot = ChatBot(
'DemoBot',
logic_adapters=[
'chatterbot.logic.BestMatch',
'chatterbot.logic.TimeLogicAdapter'],
)
from chatterbot.trainers import ListTrainer
trainer = ListTrainer(bot)
trainer.train([
'Hi',
'Hello',
'I need roadmap for Competitive Programming',
'Just create an account on GFG and start',
```

```
'I have a query.',  
'Please elaborate, your concern',  
'How long it will take to become expert in Coding ?',  
'It usually depends on the amount of practice.',  
'Ok Thanks',  
'No Problem! Have a Good Day!'  
])
```

List Trainer: [#####] 100%

```
while True:  
    request=input('you :')  
    if request == 'OK' or request == 'ok':  
        print('Bot: bye')  
        Code Text  
        break  
    else:  
        response=bot.get_response(request)  
        print('Bot:', response)
```

```
you :hello  
Bot: I need roadmap for Competitive Programming  
you :I have a query  
Bot: Please elaborate, your concern  
you :OK  
Bot: bye
```

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LP2 AI Assignment 3

Prim's Algorithm Code:

```
import java.util.*;
import java.lang.*;
import java.io.*;

class MST {

    private static final int V = 5;

    int minKey(int key[], Boolean mstSet[])
    {
        // Initialize min value
        int min = Integer.MAX_VALUE, min_index = -1;

        for (int v = 0; v < V; v++)
            if (mstSet[v] == false && key[v] < min) {
                min = key[v];
                min_index = v;
            }

        return min_index;
    }

    void printMST(int parent[], int graph[][])
    {
        System.out.println("Edge \tWeight");
        for (int i = 1; i < V; i++)
            System.out.println(parent[i] + " - " + i + "\t" + graph[i][parent[i]]);
    }

    void primMST(int graph[][])
    {

        int parent[] = new int[V];

        int key[] = new int[V];

        Boolean mstSet[] = new Boolean[V];

        for (int i = 0; i < V; i++) {
```

```

        key[i] = Integer.MAX_VALUE;
        mstSet[i] = false;
    }

    key[0] = 0;
    parent[0] = -1; // First node is always root of MST

    for (int count = 0; count < V - 1; count++) {

        int u = minKey(key, mstSet);

        mstSet[u] = true;

        for (int v = 0; v < V; v++)

            if (graph[u][v] != 0 && mstSet[v] == false && graph[u][v] <
key[v]) {

                parent[v] = u;
                key[v] = graph[u][v];
            }
        }

        printMST(parent, graph);
    }

    public static void main(String[] args)
    {
        MST t = new MST();
        int graph[][] = new int[][] { { 0, 2, 0, 6, 0 },
                                     { 2, 0, 3, 8, 5 },
                                     { 0, 3, 0, 0, 7 },
                                     { 6, 8, 0, 0, 9 },
                                     { 0, 5, 7, 9, 0 } };

        t.primMST(graph);
    }
}

```

O/P:

Edge	Weight
0 - 1	2
1 - 2	3
0 - 3	6
1 - 4	5

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LP2 AI Assignment 6

Expert System Code:

```
go:-  
hypothesis(Disease),  
write('It is suggested that the patient has '),  
write(Disease),  
nl,  
undo;  
write('Sorry, the system is unable to identify the disease'),nl,undo.
```

```
hypothesis(cold) :-  
symptom(headache),  
symptom(runny_nose),  
symptom(sneezing),  
symptom(sore_throat),  
nl,  
write('Advices and Sugestions:'),  
nl,  
write('1: Tylenol'),  
nl,  
write('2: Panadol'),  
nl,  
write('3: Nasal spray'),  
nl,  
write('Please weare warm cloths because'),  
nl!.
```

```
hypothesis(influenza) :-  
symptom(sore_throat),  
symptom(fever),  
symptom(headache),  
symptom(chills),  
symptom(body_ache),  
nl,  
write('Advices and Sugestions:'),  
nl,  
write('1: Tamiflu'),  
nl,  
write('2: Panadol'),
```

```
nl,  
write('3: Zanamivir'),  
nl,  
write('Please take a warm bath and do salt gargling because'),  
nl!.
```

```
hypothesis(typhoid) :-  
symptom(headache),  
symptom(abdominal_pain),  
symptom(poor_appetite),  
symptom(fever),  
nl,  
write('Advices and Sugestions:'),  
nl,  
write('1: Chloramphenicol'),  
nl,  
write('2: Amoxicillin'),  
nl,  
write('3: Ciprofloxacin'),  
nl,  
write('4: Azithromycin'),  
nl,  
write('Please do complete bed rest and take soft diet because'),  
nl!.
```

```
hypothesis(chicken_pox) :-  
symptom(rash),  
symptom(body_ache),  
symptom(fever),  
nl,  
write('Advices and Sugestions:'),  
nl,  
write('1: Varicella vaccine'),  
nl,  
write('2: Immunoglobulin'),  
nl,  
write('3: Acetomenaphin'),  
nl,  
write('4: Acyclovir'),  
nl,  
write('Please do have oatmeal bath and stay at home because'),  
nl.
```

```
hypothesis(measles) :-  
    symptom(fever),  
    symptom(runny_nose),  
    symptom(rash),  
    symptom(conjunctivitis),  
    nl,  
    write('Advices and Sugestions:'),  
    nl,  
    write('1: Tylenol'),  
    nl,  
    write('2: Aleve'),  
    nl,  
    write('3: Advil'),  
    nl,  
    write('4: Vitamin A'),  
    nl,  
    write('Please get rest and use more liquid because'),  
    nl!.
```

```
hypothesis(malaria) :-  
    symptom(fever),  
    symptom(sweating),  
    symptom(headache),  
    symptom(nausea),  
    symptom(vomiting),  
    symptom(diarrhea),  
    nl,  
    write('Advices and Sugestions:'),  
    nl,  
    write('1: Aralen'),  
    nl,  
    write('2: Qualaquin'),  
    nl,  
    write('3: Plaquenil'),  
    nl,  
    write('4: Mefloquine'),  
    nl,  
    write('Please do not sleep in open air and cover your full skin because'),  
    nl!.
```

```

ask(Question) :-
    write('Does the patient has the symptom '),
    write(Question),
    write('? : '),
    read(Response),
    nl,
    ( (Response == yes ; Response == y)
    ->
        assert(yes(Question));
        assert(no(Question)), fail).
:- dynamic yes/1,no/1.

```

```

symptom(S) :-
    (yes(S)
    ->
        true ;
        (no(S)
        ->
            fail ;
            ask(S))).

```

```

undo :- retract(yes(_)),fail.
undo :- retract(no(_)),fail.
undo.

```

O/P:

```

?- go.
Does the patient has the symptom headache? : y.
Does the patient has the symptom runny_nose? : |: n.
Does the patient has the symptom sore_throat? : |: y.
Does the patient has the symptom fever? : |: y.
Does the patient has the symptom chills? : |: y.
Does the patient has the symptom body_ache? : |: y.

```

Advices and Sugestions:

- 1: Tamiflu
- 2: Panadol
- 3: Zanamivir

Please take a warm bath and do salt gargling because
It is suggested that the patient has influenza
true .

?-

3101047

WTL Assignment 1

Sr. No	Website Url	Purpose of Website	Things Liked	Things Disliked	Overall Evaluation (Good/Bad)
1	www.youtube.com	Entertainment and Education	Good for passing time	Misleading information	Good
2	www.geeksforgeeks.org	Providing programming knowledge	Good Explanations and easy to learn	Ads and pop-ups	Good
3	www.facebook.com	Social Media Network	Sharing photos and videos	Data leaks and Privacy concerns	Bad
4	www.quora.com	QnA community	User friendly	Spams	Good
5	www.twitter.com	Expressing your views	Knowledge gaining	Toxic user base	Good

3101047
WTL Assignment 2

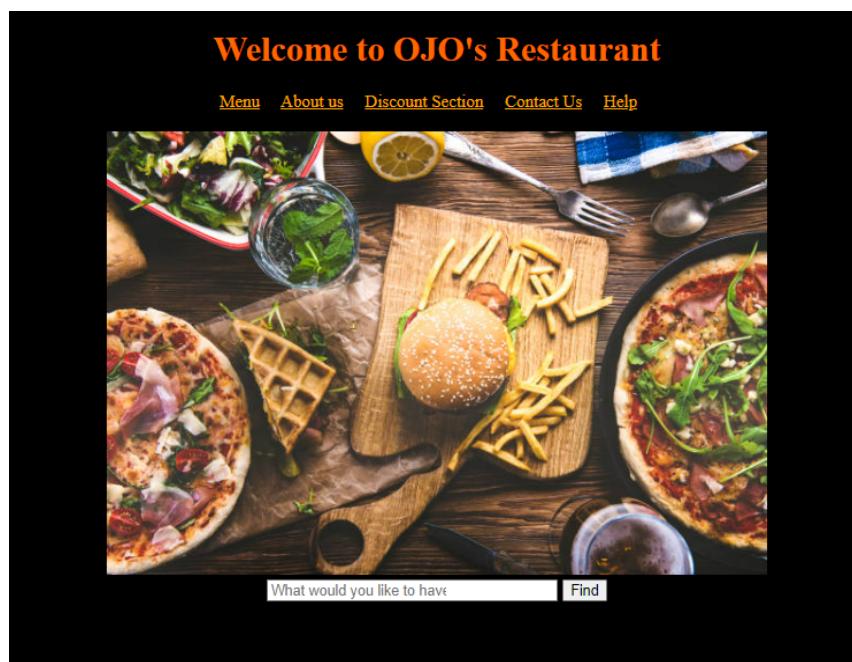
index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Assignment 2</title>
<link rel="stylesheet" href="assign2.css">
</head>
<body>
<div class="headline">
<h1>Welcome to OJO's Restaurant</h1>
</div>
<div class="menu">
<a href="#">Menu</a>
<a href="#">About us</a>
<a href="#">Discount Section</a>
<a href="#">Contact Us</a>
<a href="#">Help</a>
</div>
<div class="img">
<br>

<br>
<input id="text" type="text" placeholder="What would you like to have">
<button class="btn">Find</button>
</div>
<style>
.btn:hover {
background-color: rgb(0, 102, 255);
}
.img img:hover {
border: 1px solid rgb(255, 102, 0);
}
</style>
</body>
</html>
```

assign2.css

```
body{  
background-color: rgb(0, 0, 0);  
height: 100%;  
}  
.menu a{  
padding-right: 1rem;  
color: rgb(255, 166, 0);  
}  
.headline h1{  
text-align: center;  
color: rgb(255, 102, 0);  
}  
.menu{  
text-align: center;  
}  
.menu a:hover{  
color:aqua;  
}  
.img {  
display: block;  
text-align: center;  
}  
#text{  
padding-right:5%;  
}
```



3101047
WTL Assignment 3

employee.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type = "text/xsl" href="index.xsl"?>
<!DOCTYPE note [
<!ENTITY nbsp "&#xA0;">
<!ENTITY writer "Writer: Omkar Mundada" >
<br>
<note>
<to>SITS</to>
<heading>Employee</heading>
<body>Information</body>
</note>
<br>
<catalog>
<cd>
<name>Swalpesh</name>
<id>53</id>
<country>India</country>
<company>Infosys</company>
<salary>300000</salary>
<year>2020</year>
</cd>
<cd>
<br>
<name>Omkar</name>
<id>50</id>
<country>Russia</country>
<company>Nvidia</company>
<salary>700000</salary>
<year>2019</year>
</cd>
<cd>
<br>
<name>Mandar</name>
<id>51</id>
<country>Ukraine</country>
<company>Cognizant</company>
<salary>900000</salary>
<year>2016</year>
</cd>
```

```

<cd>
<br>
<name>Abhishek</name>
<id>47</id>
<country>UK</country>
<company>Wipro</company>
<salary>400000</salary>
<year>2021</year>
</cd>
</catlog>

```

index.xlst

```

<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
<html>
<body>
<h1>Employee Database</h1>
<h3> (Omkar and Abhishek) </h3>
<table border="1">
<tr bgcolor="#00FFFF">
<th style="text-align:left">NAME</th>
<th style="text-align:left">EMP_ID</th>
<th style="text-align:left">COUNTRY</th>
<th style="text-align:left">COMPANY</th>
<th style="text-align:left">SALARY</th>
<th style="text-align:left">JOIN_YEAR</th>
</tr>
<xsl:for-each select="catalog/cd">
<tr>
<td><xsl:value-of select="name"/></td>
<td><xsl:value-of select="id"/></td>
<td><xsl:value-of select="country"/></td>
<td><xsl:value-of select="company"/></td>
<td><xsl:value-of select="price"/></td>
<td><xsl:value-of select="year"/></td>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>

```

O/P:

SITS Employee Information
Swalpesh 53 India Infosys 300000 2020
Omkar 50 Russia Nvidia 700000 2019
Mandar 51 Ukraine Cognizant 900000 2016
Abhishek 47 UK Wipro 400000 2021

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WTL Assignment 4

calculator.html

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<meta http-equiv="X-UA-Compatible" content="ie=edge">
<link rel="stylesheet" href="calculator.css">
<title>Calculator</title>
</head>
<body>
<div class="container">
<div class="calculator">
<input type="text" name="screen" id="screen">
<table>
<tr>
<td><button>(</button></td>
<td><button>)</button></td>
<td><button>C</button></td>
<td><button>%</button></td>
</tr>
<tr>
<td><button>7</button></td>
<td><button>8</button></td>
<td><button>9</button></td>
<td><button>X</button></td>
</tr>
<tr>
<td><button>4</button></td>
<td><button>5</button></td>
<td><button>6</button></td>
<td><button>-</button></td>
</tr>
<tr>
<td><button>1</button></td>
<td><button>2</button></td>
<td><button>3</button></td>
<td><button>+</button></td>
</tr>
<tr>
```

```
<td><button>0</button></td>
<td><button>.;</button></td>
<td><button>/</button></td>
<td><button id="result">=</button></td>
</tr>
</table>
</div>
</div>
</body>
<script src="calculator.js"></script>
</html>
```

calculator.css

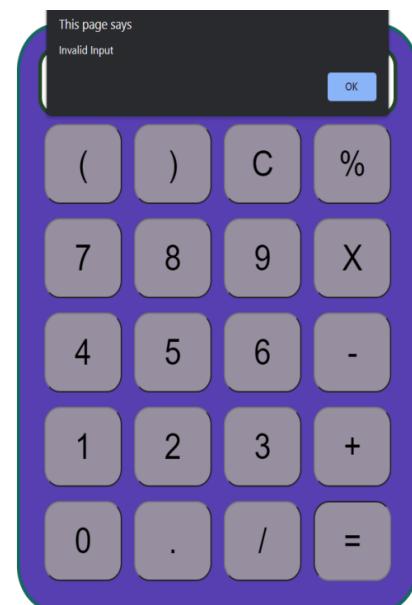
```
.container{
text-align: center;
margin-top:23px
}
table{
margin: auto;
}
input{
border-radius: 21px;
border: 5px solid #244624;
font-size:34px;
height: 65px;
width: 456px;
}
button{
border-radius: 20px;
font-size: 40px;
background: #978fa0;
width: 102px;
height: 90px;
margin: 6px;
}
.calculator{
border: 4px solid #13695d;
background-color: #573eb1;
padding: 23px;
border-radius: 53px;
display: inline-block;
}
h1{
```

```
font-size: 28px;  
font-family: 'Courier New', Courier, monospace;  
}
```

calculator.js

```
let screen = document.getElementById('screen');  
buttons = document.querySelectorAll('button');  
let screenValue = " ";  
for (item of buttons) {  
    item.addEventListener('click', (e) => {  
        buttonText = e.target.innerText;  
        console.log('Button text is ', buttonText);  
        if (buttonText == 'X') {  
            buttonText = '*';  
            screenValue += buttonText;  
            screen.value = screenValue;  
        }  
        else if (buttonText == 'C') {  
            screenValue = "";  
            screen.value = screenValue;  
        }  
        else if (buttonText == '=') {  
            screen.value = eval(screenValue);  
        }  
        else {  
            screenValue += buttonText;  
            screen.value = screenValue;  
        }  
    })  
}  
  
var button = document.getElementById("result");  
function validate(value) {  
    if (value == "undefined") {  
        window.alert("Invalid Input");  
        return false;  
    }  
    if (value == "Infinity") {  
        window.alert("Divide by 0 error");  
        return false;  
    }  
}  
button.addEventListener("click", function (e) {  
    var value = document.getElementById("screen").value;  
    validate(value);  
});
```

O/P:



3101047
WTL Assignment 5

index.html

```
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Assignment No.5</title>
</head>
<body>
<h1>Get data from database using Servlet</h1>
<form action=".ass5">
    <input type="submit" name="index">
</form>
</body>
</html>
```

ass5.java

```
import java.sql.*;
import java.io.IOException;
import java.io.PrintWriter;

import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 * Servlet implementation class Assignment
 */
@WebServlet("/Assignment")
public class Assignment extends HttpServlet {
    private static final long serialVersionUID = 1L;

    /**
     * @see HttpServlet#HttpServlet()
     */
    public Assignment() {
        super();
        // TODO Auto-generated constructor stub
    }
```

```

}

/**
 * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse
response)
 */
protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
    // TODO Auto-generated method stub
    PrintWriter out=response.getWriter();
    out.print("<html><body><head><style>table,th,td {border: 2px solid
black;}</style></head>");
    out.print("<table><tr><th>ID</th><th>Book name</th><th>Book
author</th><th>Book Price</th><th>Book Quantity</th></tr>");
try {
    Class.forName("com.mysql.jdbc.Driver");
    Connection
conn=DriverManager.getConnection("jdbc:mysql://localhost:3306/java","root","");
Statement stmt=conn.createStatement();
ResultSet rs=stmt.executeQuery("select * from ebookshop");
while(rs.next()) {
    out.print("<tr><td>");
    out.print(rs.getInt(1));
    out.print("</td>");
    out.print("<td>");
    out.print(rs.getString(2));
    out.print("</td>");
    out.print("<td>");
    out.print(rs.getString(3));
    out.print("</td>");
    out.print("<td>");
    out.print(rs.getInt(4));
    out.print("</td>");
    out.print("<td>");
    out.print(rs.getInt(5));
    out.print("</td><tr>");
}
}catch(Exception p)
{
    System.out.println(p);
}

```

```

        out.print("</table></body></html>");

    }

/**
 * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse
response)
 */
protected void doPost(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
    // TODO Auto-generated method stub
    doGet(request, response);
}

}

```

O/P:

Get data from database using Servlet

ID	Book name	Book author	Book Price	Book Quantity
1	All the bright places	Jeniffer Niven	199	5
2	Memoirs of Geisha	Arthur Golden	299	5
3	Sacred Games	Vikram Chandra	467	21

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WTL Assignment 6

StudentDetails.jsp

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Student Registration</title>
</head>
<body>
<h1 style="text-align: center">Student has been Successfully Registered!</h1>
<%
String studentFirstName = request.getAttribute("firstName").toString();
String studentLastName = request.getAttribute("lastName").toString();
String studentUsername = request.getAttribute("username").toString();
String studentContact = request.getAttribute("contact").toString();
String studentAddress = request.getAttribute("address").toString();

out.println("<h2>Please verify the details</h2>");
%>
<table border="1" style="width: 80%; margin-left: auto; margin-right: auto; ">
<tr>
<td><b>First Name</b></td>
<td><%= studentFirstName %></td>
</tr>
<tr>
<td><b>Last Name</b></td>
<td><%= studentLastName %></td>
</tr>
<tr>
<td><b>UserName</b></td>
<td><%= studentUsername %></td>
</tr>
<tr>
<td><b>Address</b></td>
<td><%= studentAddress %></td>
</tr>
<tr>
<td><b>Contact No</b></td>
<td><%= studentContact %></td>
```

```
</tr>
</table>
</body>
</html>
```

StudentRegister.jsp

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Student Registration</title>
</head>
<body>
<div align="center">
<h1>Student Register Form</h1>
<form action="<% request.getContextPath() %>/register" method="post">
<table style="width: 80%">
<tr>
<td>First Name</td>
<td><input type="text" name="firstName" /></td>
</tr>
<tr>
<td>Last Name</td>
<td><input type="text" name="lastName" /></td>
</tr>
<tr>
<td>UserName</td>
<td><input type="text" name="username" /></td>
</tr>
<tr>
<td>Password</td>
<td><input type="password" name="password" /></td>
</tr>
<tr>
<td>Address</td>
<td><input type="text" name="address" /></td>
</tr>
<tr>
<td>Contact No</td>
<td><input type="text" name="contact" /></td>
</tr>
```

```
</table>
<input type="submit" value="Submit" />
</form>
</div>
</body>
</html>
```

Student.java

```
import java.io.Serializable;
public class Student implements Serializable {

    private static final long serialVersionUID = 1L;
    private String firstName;
    private String lastName;
    private String username;
    private String password;
    private String address;
    private String contact;
    public String getFirstName() {
        return firstName;
    }
    public void setFirstName(String firstName) {
        this.firstName = firstName;
    }
    public String getLastname() {
        return lastName;
    }
    public void setLastName(String lastName) {
        this.lastName = lastName;
    }
    public String getUsername() {
        return username;
    }
    public void setUsername(String username) {
        this.username = username;
    }
    public String getPassword() {
        return password;
    }
    public void setPassword(String password) {
        this.password = password;
    }
    public String getAddress() {
```

```

        return address;
    }
    public void setAddress(String address) {
        this.address = address;
    }
    public String getContact() {
        return contact;
    }
    public void setContact(String contact) {
        this.contact = contact;
    }
}

```

StudentDAO.java

```

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;

public class StudentDAO {

    public int registerStudent(Student student) throws ClassNotFoundException {
        String INSERT_USERS_SQL = "INSERT INTO student" +
            " (first_name, last_name, username, password, address, contact) VALUES " +
            " (?, ?, ?, ?, ?, ?);";

        int result = 0;

        Class.forName("com.mysql.jdbc.Driver");

        //Step 1: Established the connection with database
        try (Connection connection = DriverManager
            .getConnection("jdbc:mysql://localhost:3306/registrationapp? useSSL=false", "root",
            "abc123*"));

            // Step 2:Create a statement using connection object
            PreparedStatement preparedStatement =
            connection.prepareStatement(INSERT_USERS_SQL)) {
                preparedStatement.setString(1, student.getFirstName());
                preparedStatement.setString(2, student.getLastName());
                preparedStatement.setString(3, student.getUsername());
                preparedStatement.setString(4, student.getPassword());
                preparedStatement.setString(5, student.getAddress());
            }
        }
    }
}

```

```

        preparedStatement.setString(6, student.getContact());

        // Step 3: Execute the query or update query
        result = preparedStatement.executeUpdate();

    } catch (SQLException e) {
        // process sql exception
        printSQLException(e);
    }
    return result;
}

private void printSQLException(SQLException ex) {
    for (Throwable e: ex) {
        if (e instanceof SQLException) {
            e.printStackTrace(System.err);
            System.err.println("SQLState: " + ((SQLException) e).getSQLState());
            System.err.println("Error Code: " + ((SQLException) e).getErrorCode());
            System.err.println("Message: " + e.getMessage());
            Throwable t = ex.getCause();
            while (t != null) {
                System.out.println("Cause: " + t);
                t = t.getCause();
            }
        }
    }
}

```

StudentServlet.java

```

import java.io.IOException;
import javax.servlet.RequestDispatcher;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@WebServlet("/register")
public class StudentServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;
    private StudentDAO studentDAO;

```

```
public void init() {
    studentDAO = new StudentDAO();
}

protected void doPost(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {

    int registerStudentId = 0;

    String firstName = request.getParameter("firstName");
    String lastName = request.getParameter("lastName");
    String username = request.getParameter("username");
    String password = request.getParameter("password");
    String address = request.getParameter("address");
    String contact = request.getParameter("contact");

    Student student = new Student();
    student.setFirstName(firstName);
    student.setLastName(lastName);
    student.setUsername(username);
    student.setPassword(password);
    student.setContact(contact);
    student.setAddress(address);

    try {
        registerStudentId = studentDAO.registerStudent(student);
    } catch (Exception e) {
        e.printStackTrace();
    }
    if(registerStudentId > 0) {
        request.setAttribute("firstName",student.getFirstName());
        request.setAttribute("lastName",student.getLastName());
        request.setAttribute("username",student.getUsername());
        request.setAttribute("contact", student.getContact());
        request.setAttribute("address", student.getAddress());
    }

    RequestDispatcher requestDispatcher =
    request.getRequestDispatcher("studentDetails.jsp");
    requestDispatcher.forward(request, response);
}
}
```

O/P:

Student Register Form

First Name	Gauri
Last Name	Joshi
UserName	gj
Password
Address	Nashik
Contact No	5555555555
<input type="button" value="Submit"/>	

Student has been Successfully Registered!

Please verify the details

First Name	Gauri
Last Name	Joshi
UserName	gj
Address	Nashik
Contact No	5555555555

3101047
WTL Assignment 7

dbconnect.php

```
<?php
//$servername = "localhost";
//$username = "root";
//$password = "";
//$/dbname = "sample";

// Create connection
$conn = mysqli_connect("localhost", "root", "");
//$/conn = mysqli_connect($servername, $username, $password);
$dbcon = mysqli_select_db($conn,"test1");

// Check connection
if (!$conn)
{
    die("Connection failed: " . mysqli_connect_error());
    //print message and exit current script
    //mysqli_connect_error() function returns the error description
}
else
{
    echo "Connected successfully<br>";
}

if ( !$dbcon ){
    die("Database Connection failed : " . mysqli_connect_error());
}
else
{
    echo "Connection to Database Successful<br>";
}
?>
```

create_table.php

```
<?php
include("1_dbconnect.php");

$query1="CREATE TABLE student1 (id INT, Name VARCHAR(20))";
```

```
$res1=mysqli_query($conn,$query1);
if ($res1)
{
    echo "<br><h4>Table Student1 created successfully</h4>";
}
else
{
    echo "Error: " . $res1 . "<br>" . mysqli_error($conn);
}
mysqli_close($conn);
?>
```

add1.php

```
<?php
include("1_dbconnect.php");
$query1 = "INSERT INTO student1 (id, name)VALUES (1, 'Omkar')";
$query2 = "INSERT INTO student1 (id, name)VALUES (2, 'Rahul')";
$query3 = "INSERT INTO student1 (id, name)VALUES (3, 'Abdul')";
$query4 = "INSERT INTO student1 (id, name)VALUES (4, 'Ram')";
$res1 = mysqli_query($conn, $query1);
$res2 = mysqli_query($conn, $query2);
$res4 = mysqli_query($conn, $query4);
$res3 = mysqli_query($conn, $query3);

if ($res1)
{
    echo "<br><h4>New record created successfully</h4>";
}
else
{
    echo "Error: " . $res1 . "<br>" . mysqli_error($conn);
}
mysqli_close($conn);
?>
```

show.php

```
<?php
include("1_dbconnect.php");

$query = "SELECT * FROM student1";
$res = mysqli_query($conn, $query);
// $count = mysqli_num_rows($res);
```

```

//if ($count > 0)
//{
echo "<table border='1'>";
echo "<tr><th>Roll No</th><th>Name</th></tr>";

while($row=mysqli_fetch_array($res))
{
echo "<tr> <td>";
echo $row["id"];
echo "</td> <td>";
echo $row["Name"];
echo "</td> </tr>";
// echo"</tr>

}
echo"</table>";

//}
mysqli_close($conn);
?>

```

create_table2.php

```

<?php

// $servername = "localhost";
// $username = "root";
// $password = "";
// $dbname = "sample";

// Create connection
$conn = mysqli_connect("localhost", "root", "");
// $conn = mysqli_connect($servername, $username, $password);
$dbcon = mysqli_select_db($conn, "test1");
// Check connection

if (!$conn)
{
    die("Connection failed: " . mysqli_connect_error());
    // print message and exit current script
    // mysqli_connect_error() function returns the error description
}

```

```

        }
    else
    {
        echo "Connected successfully<br>";
    }

    if( !$dbcon )
    {
        die("Database Connection failed : " . mysqli_connect_error());
    }
    else
    {
        echo "Connection to Database Successful<br>";
    }
}

$query1="CREATE TABLE student2 (id INT, Name VARCHAR(20))";
$res1=mysqli_query($conn,$query1);
if($res1)
{
    echo "<br><h4>Table Student1 created successfully</h4>";
}
else
{
    echo "Error: " . $res1 . "<br>" . mysqli_error($conn);
}
mysqli_close($conn);
?>

```

O/P:

```

Connected successfully
Connection to Database Successful

```

```

Connected successfully
Connection to Database Successful

```

Table Student1 created successfully

Connected successfully
Connection to Database Successful

New record created successfully

Connected successfully
Connection to Database Successful

Roll No	Name
1	Rahul
1	Omkar
2	Rahul
4	Ram
3	Abdul

Connected successfully
Connection to Database Successful

Table Student1 created successfully

3101047
WTL Assignment 9

index.html

```
<!DOCTYPE html>
<html>

    <head>
        <meta charset="utf-8">
        <title>Assignment</title>
        <meta name="viewport" content="width=device-width, initial-scale=1">
        <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.2/jquery.min.js"></script>
        <script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.2.26/angular.min.js"></script>
        <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.2.0/css/bootstrap.min.css">
        <script src="app.js"></script>
    </head>

    <body>
        <div ng-app="myApp" class="container" style="width:550px">
            <div style="text-align:center;color:rgb(255, 0, 93)">
                <h3><b>User Registration Form</b></h3>
            </div>
            <div ng-controller="ContactController">
                <div align="right">
                    <a href="#" ng-click="searchUser()">{{title}}</a>
                </div>
                <form role="form" class="well" ng-hide="ifSearchUser">
                    <div class="form-group">
                        <label for="name"> Name: </label>
                        <input type="text" id="name" class="form-control" placeholder="Enter Name
"
                               ng-model="newcontact.name">
                    </div>
                    <div class="form-group">
                        <label for="email"> Email: </label>
                        <input type="email" id="email" class="form-control" placeholder="Enter
Email "
                               ng-model="newcontact.email">
                    </div>
                    <div class="form-group">
                        <label for="password"> Password: </label>
```

```

<input type="password" id="password" class="form-control"
placeholder="Enter Password "
    ng-model="newcontact.password">
</div>
<div class="form-group">
    <label for="phone"> Phone: </label>
    <input type="text" id="phone" class="form-control" placeholder="Enter
Phone "
        ng-model="newcontact.phone">
</div>
<br>
<input type="hidden" ng-model="newcontact.id">
<input type="button" class="btn btn-primary" ng-click="saveContact()"
class="btn btn-primary"
    value="Submit">
</form>

<div>
    <h4><b>Registered Users</b></h4>
    <table ng-if="contacts.length" class="table table-striped table-bordered
table-hover">
        <thead>
            <tr class="info">
                <th>Name</th>
                <th>Email</th>
                <th>Phone</th>
                <th ng-if="!ifSearchUser">Action</th>
            </tr>
        </thead>
        <tbody>
            <tr ng-repeat="contact in contacts">
                <td>{{ contact.name }}</td>
                <td>{{ contact.email }}</td>
                <td>{{ contact.phone }}</td>
                <td ng-if="!ifSearchUser">
                    <a href="#" ng-click="edit(contact.id)" role="button" class="btn
btn-info">edit</a>
                    &nbsp;
                    <a href="#" ng-click="delete(contact.id)" role="button"
class="btn btn-danger">delete</a>
                </td>
            </tr>
        </tbody>
    </table>

```

```

        </table>
        <div ng-hide="contacts.length > 0">No Users Found</div>
    </div>
</div>
</body>

</html>

```

app.js

```

var myApp = angular.module("myApp", []);
myApp.service("ContactService" , function(){
    var uid = 1;
    var contacts = [
        {
            'id' : 0,
            'name' : 'Steve John',
            'email' : 'john@gmail.com',
            'password': 'John123',
            'phone' : '911-91-199-999'}];

    // Save Service for saving new contact and saving existing edited contact.
    this.save = function(contact)
    {
        if(contact.id == null)
        {
            contact.id = uid++;
            contacts.push(contact);
        }
        else
        {
            for(var i in contacts)
            {
                if(contacts[i].id == contact.id)
                {
                    contacts[i] = contact;
                }
            }
        }
    };

    // search for a contact

    this.get = function(id)

```

```

{
    for(var i in contacts )
    {
        if( contacts[i].id == id)
        {
            return contacts[i];
        }
    }
};

//Delete a contact
this.delete = function(id)
{
    for(var i in contacts)
    {
        if(contacts[i].id == id)
        {
            contacts.splice(i,1);
        }
    }
};

//Show all contacts
this.list = function()
{
    return contacts;
}
;

});

///Controller area .....

myApp.controller("ContactController" , function($scope , ContactService){
    console.clear();

    $scope.ifSearchUser = false;
    $scope.title ="List of Users";

    $scope.contacts = ContactService.list();

    $scope.saveContact = function()
    {
        console.log($scope.newcontact);
        if($scope.newcontact == null || $scope.newcontact == angular.undefined)
        return;
        ContactService.save($scope.newcontact);
    }
});

```

```
        $scope.newcontact = {};
    };
    $scope.delete = function(id)
    {
        ContactService.delete(id);
        if($scope.newcontact != angular.undefined && $scope.newcontact.id
== id)
        {
            $scope.newcontact = {};
        }
    };
    $scope.edit = function(id)
    {
        $scope.newcontact = angular.copy(ContactService.get(id));
    };
    $scope.searchUser = function(){
        if($scope.title == "List of Users"){
            $scope.ifSearchUser=true;
            $scope.title = "Back";
        }
        else
        {
            $scope.ifSearchUser = false;
            $scope.title = "List of Users";
        }
    };
});
```

O/P:

User Registration Form

[List of Users](#)

Name:

Email:

Password:

Phone:

Submit

Registered Users

Name	Email	Phone	Action
Omkar Ovhal	omjovhal@gmail.com	9112233445	edit delete
New Person	newemail@gmail.com	9898765744	edit delete

User Registration Form

[Back](#)

Registered Users

Name	Email	Phone
Omkar Ovhal	omjovhal@gmail.com	9112233445
New Person	newemail@gmail.com	9898765744

3101047
WTL Assignment 10

transact.java

```
String selectedType=request.getParameter("transaction");
int amount=Integer.parseInt(request.getParameter("an"));
if(selectedType.equals("deposit")){
bankTransact.deposit(amount);
int amt=bankTransact.withdraw(0);
out.println("Rs." + amount + " successfully deposited." + <br>Your balance is :Rs." + amt);
}
if(selectedType.equals("withdraw")){
int amt=bankTransact.withdraw(amount);
out.println(amount + " successfully withdrawn.<br>Your balance is :Rs." + amt);
}
```

BankTransact.java

```
int balance=100000;
@Override
public void deposit(int amount) {
balance=balance+amount;
}
@Override
public int withdraw(int amount) {
balance= balance - amount;
return balance;
}
```

index.html

```
<!DOCTYPE html>
<!--
To change this license header, choose License Headers in Project Properties.
To change this template file, choose Tools | Templates
and open the template in the editor.
-->
<html>
<head>
<title>Bank transactions using EJB</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
```

```
<body>
<form method='post' action='transact'>
<h1>Bank application using EJB</h1>
Enter account:<input type="text" name='an' />
<h1>Select options</h1>
<input type="radio" name="transaction" value="deposit">Deposit<br>
<input type="radio" name="transaction" value="withdrawl">Withdrawl<br>
<input type="submit" value='Submit' />
</form>
</body>
</html>
```

O/P:

Bank application using EJB

Enter account:

Select options

Deposit
 Withdrawl

Rs.5000 successfully deposited.
Your balance is :Rs.120000

Bank application using EJB

Enter account:

Select options

Deposit
 Withdrawl

5000 successfully withdrawn.
Your balance is :Rs.115000

3101047
WTL Assignment 8

index.jsp

```
<!DOCTYPE html>
<html>
<head>
<title>JavaScript Form Validation Demo</title>
</head>
<body>
<div class="container">
<form id="signup" class="form" action="Hello.jsp">
<h1>Sign Up</h1>
<div class="form-field">
<label for="username">Username:</label>
<input type="text" name="username" id="username" autocomplete="off">
<small></small>
</div>
<div class="form-field">
<label for="email">Email:</label>
<input type="email" name="email" id="email" autocomplete="off">
<small></small>
</div>
<div class="form-field">
<label for="mobile">Mobile</label>
<input type="number" name="mobile" id="mobile" autocomplete="off">
<small></small>
</div>
<input type="submit" value="Sign Up">
</form>
</div>
<script src="app.js"></script>
</body>
</html>
```

hello.jsp

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
```

```

<title> HelloWorld </title>
</head>
<body>
<% String name = request.getParameter("username");
String Mobile = request.getParameter("mobile");
String Email = request.getParameter("email");
session.setAttribute("name", name);
session.setAttribute("mobile", Mobile);
session.setAttribute("email", Email);
%>
Hi!!! My name is * <%out.println(session.getAttribute("name"));%>*<br /><br>
Mobile Number is:-<%out.println(session.getAttribute("mobile"));%><br><br>
Email id:-<%out.println(session.getAttribute("email"));%><br><br>
</body>
</html>

```

app.js

```

const usernameEl = document.querySelector('#username');
const emailEl = document.querySelector('#email');
const form = document.querySelector('#signup');
const checkUsername = () => {
let valid = false;
const min = 3,
max = 25;
const username = usernameEl.value.trim();
if (!isRequired(username)) {
alert('Username cannot be blank.');
var letters = /^[A-Za-z]+$/;
if(username.match(letters))
{
window.location.replace("./Hello.jsp");
}
else
{
alert("please enter valid username !");
}
} else if (!isBetween(username.length, min, max)) {
showError(usernameEl, `Username must be between ${min} and ${max} characters.`);
} else {
showSuccess(usernameEl);
valid = true;
}
return valid;

```

```
};

const checkEmail = () => {
let valid = false;
const email = emailEl.value.trim();
if (!isRequired(email)) {
alert('Email cannot be blank.');
} else if (!isValidEmail(email)) {
alert('Email is not valid.')
} else {
showSuccess(emailEl);
valid = true;
}
return valid;
};

const isValidEmail = (email) => {
const re =
/^(([^\<\>()\\[\]\\.,;:\\s@"]+([^\<\>()\\[\]\\.,;:\\s@"]+)*|(.+))@((\[[0-9]{1,3}\].[0-9]{1,3}\].[0-9]{1,3})|(([a-zA-Z]-[0-9]+.)+[a-zA-Z]{2,}))$/;
return re.test(email);
};

const isRequired = value => value === "" ? false : true;
const isBetween = (length, min, max) => length < min || length > max ? false : true;
const showError = (input, message) => {
// get the form-field element
const formField = input.parentElement;
// add the error class
formField.classList.remove('success');
formField.classList.add('error');
// show the error message
const error = formField.querySelector('small');
error.textContent = message;
};

const showSuccess = (input) => {
// get the form-field element
const formField = input.parentElement;
// remove the error class
formField.classList.remove('error');
formField.classList.add('success');
// hide the error message
const error = formField.querySelector('small');
error.textContent = "";
}

form.addEventListener('submit', function (e) {
// prevent the form from submitting
```

```
e.preventDefault();
// validate fields
let isUsernameValid = checkUsername()
isValidEmail = checkEmail();
let isValidForm = isUsernameValid &&
isValidEmail;
// submit to the server if the form is valid
if (isValidForm) {
}
});
const debounce = (fn, delay = 500) => {
let timeoutId;
return (...args) => {
// cancel the previous timer
if (timeoutId) {
clearTimeout(timeoutId);
}
// setup a new timer
timeoutId = setTimeout(() => {
fn.apply(null, args)
}, delay);
};
};
form.addEventListener('input', debounce(function (e) {
switch (e.target.id) {
case 'username':
checkUsername();
break;
case 'email':
checkEmail();
break;
}
}));
```

O/P:

Gmail YouTube Docs DSA 450 Goal DSA Your Journey2Salesf

Sign Up

Username:

Email:

Mobile

This page says
Email is not valid.

Gmail YouTube Docs DSA 450 Goal DSA Your Journey2Salesf

Sign Up

Username:

Email:

Mobile

This page says
Email cannot be blank.

Gmail YouTube Docs DSA 450 Goal DSA Your Journey2Salesf

Sign Up

Username:

Email:

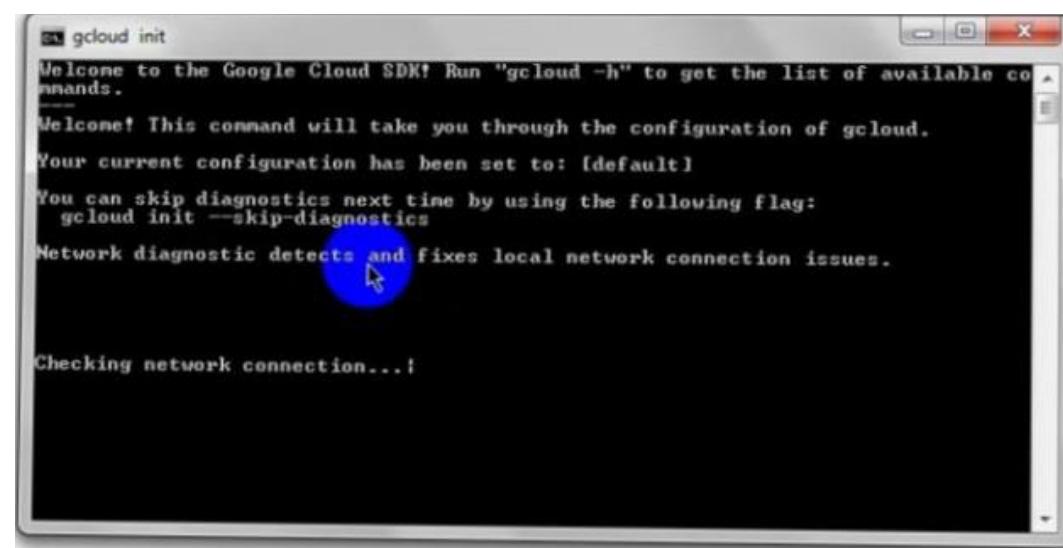
Mobile

This page says
Username cannot be blank.

3101047
LP2 CC Assignment 2

O/P:

The screenshot shows the Google App Engine Documentation page. At the top, there is a navigation bar with links for Solutions, Launcher, Pricing, Customers, Documentation (which is underlined), Support, and Partners. A blue 'Try It Free' button is also present. Below the navigation bar, the URL 'App Engine > Documentation' is shown, along with a five-star rating. The main content area has a heading 'Download and Install the SDK for App Engine'. A sub-section below it says 'The SDK for App Engine includes a local development server as well as the tooling for deploying and managing your applications in App Engine.' There are four blue buttons for 'Go', 'Java', 'PHP', and 'Python'. Below these buttons is a question 'Was this page helpful? Let us know how we did:' followed by a five-star rating.



Cloud SDK ☆☆☆☆☆

You are now authenticated with the Google Cloud SDK!

The authentication flow has completed successfully. You may close this window, or check out the resources below.

Information about command-line tools and client libraries

To learn more about `gcloud` command-line commands, see the [gcloud Tool Guide](#).

For further information about the command-line tools for Google App Engine, Compute Engine, Cloud Storage, BigQuery, Cloud SQL and Cloud DNS (which are all bundled with Cloud SDK), see [Accessing Services with gcloud](#).

If you are a client application developer and want to find out more about accessing Google Cloud Platform services with a programming language or framework, see [Google APIs Client Libraries](#).

3101047
LP2 CC Assignment 3

O/P:

The screenshot shows the Salesforce Setup interface for the 'Book' object. The left sidebar lists various configuration options: Details, Fields & Relationships (selected), Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Restriction Rules, Triggers, and Validation Rules. The main panel displays the 'Fields & Relationships' configuration for the 'Book' field. The 'Field Label' is set to 'Book'. The 'Length' is set to 16, and the 'Decimal Places' is set to 2. The 'Field Name' is also 'Book'. The 'Description' and 'Help Text' fields are empty. Under the 'Required' section, the 'Always require a value in this field in order to save a record' checkbox is unchecked. Under 'Unique', the 'Do not allow duplicate values' checkbox is unchecked. Under 'External ID', the 'Set this field as the unique record identifier from an external system' checkbox is unchecked. Under 'AI Prediction', the 'Use this field to store AI prediction scores' checkbox is unchecked, while the 'Add this field to existing custom report types that contain this entity' checkbox is checked. The 'Default Value' field contains a formula editor placeholder: 'Use formula editor. Enclose text and picklist value API names in double quotes ("The_Value"). Include numbers without quotes (25), show percentages as decimals (.10), and express date calculations in the standard format (Today) + 7. To reference a field from a Custom Metadata type record use \$CustomMetadataType__RecordName.Field__c'. The right side of the screen shows navigation buttons: Previous, Next, and Cancel.

The screenshot shows the 'New Custom Field' configuration for the 'Book' object. The left sidebar is identical to the previous screenshot. The main panel shows 'Step 2. Enter the details' of the new custom field. The 'Field Label' is set to 'Book_Name'. The 'Length' is set to 16, and the 'Decimal Places' is set to 2. The 'Field Name' is 'Book'. The 'Description' and 'Help Text' fields are empty. Under the 'Required' section, the 'Always require a value in this field in order to save a record' checkbox is unchecked. Under 'Unique', the 'Do not allow duplicate values' checkbox is unchecked. Under 'External ID', the 'Set this field as the unique record identifier from an external system' checkbox is unchecked. Under 'AI Prediction', the 'Use this field to store AI prediction scores' checkbox is unchecked, while the 'Add this field to existing custom report types that contain this entity' checkbox is checked. The 'Default Value' field contains a formula editor placeholder: 'Use formula editor. Enclose text and picklist value API names in double quotes ("The_Value"). Include numbers without quotes (25), show percentages as decimals (.10), and express date calculations in the standard format (Today) + 7. To reference a field from a Custom Metadata type record use \$CustomMetadataType__RecordName.Field__c'. The right side of the screen shows 'Step 2 of 4' and navigation buttons: Previous, Next, and Cancel.

Setup Home Object Manager

SETUP > OBJECT MANAGER Book

Details

Fields & Relationships

- Page Layouts
- Lightning Record Pages
- Buttons, Links, and Actions
- Compact Layouts
- Field Sets
- Object Limits
- Record Types
- Related Lookup Filters
- Restriction Rules
- Triggers
- Validation Rules

New Custom Field

Step 4. Add to page layouts Step 4 of 4

Field Label: Book_Name
Data Type: Number
Field Name: Book

Select the page layouts that should include this field. The field will be added as the last field in the first 2-column section of these page layouts. The field will not appear on any pages if you do not select a layout.

To change the location of this field on the page, you will need to customize the page layout.

Add Field - Page Layout Name
 Book Layout

When finished, click Save & New to create more custom fields, or click Save if you are done.

Previous Save & New Save Cancel

Setup Home Object Manager

SETUP > OBJECT MANAGER Book

Fields & Relationships

4 items, Sorted by Field Label

	FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Page Layouts	Book Name	Name	Text(80)		✓
Lightning Record Pages	Created By	CreatedById	Lookup(User)		
Buttons, Links, and Actions	Last Modified By	LastModifiedById	Lookup(User)		
Compact Layouts	Owner	OwnerId	Lookup(User/Group)		✓

Quick Find New Deleted Fields Field Dependencies Set History Tracking

Details

- Page Layouts
- Lightning Record Pages
- Buttons, Links, and Actions
- Compact Layouts
- Field Sets
- Object Limits
- Record Types
- Related Lookup Filters
- Restriction Rules
- Triggers
- Validation Rules

3101047

LP2 CC Assignment 4

O/P:

Build an Experience Cloud Site with Knowledge and Chat > [Launch Your Trailhead Playground](#)

To complete this project, you need a free Trailhead Playground. You can find it at the bottom of this page. Click **Launch** to open the Trailhead Playground in a new browser tab (login required).

It typically takes 3–4 minutes from the time you first sign up for Trailhead to create your Trailhead Playground.

Verify Step +100 points

You'll be completing this project in your own hands-on org. Click **Launch** to get started, or click the name of your org to choose a different one.

Do you use Salesforce in a language other than English? Set the language of your hands-on org to English before you attempt this project. Want to find out more about using hands-on orgs on Trailhead? Check out [Trailhead Playground Management](#).

First_App
Created on 3/30/2022

Launch

SETUP > OBJECT MANAGER

Comment

Details	
Fields & Relationships	Description
Page Layouts	API Name
Lightning Record Pages	Comment_c
Buttons, Links, and Actions	Custom
Compact Layouts	✓
Field Sets	Singular Label
Object Limits	Comment
Record Types	Plural Label
Related Lookup Filters	Comments
Search Layouts	
Search Layouts for Salesforce Classic	
Restriction Rules	

Edit **Delete**

Search Setup

Setup Home Object Manager

User Interface

Rename **Tabs** and Labels

Tabs

Didn't find what you're looking for?
Try using Global Search.

Edit Custom Object Tab
Comments

Fill in the fields below to define the custom tab.

Custom Tab Definition Edit

Custom Object Tab Information

Tab Label	Comments
Object	Comment
Tab Style	Fan

(Optional) Choose a Home Page Custom Link to show as a splash page the first time your users click on this tab.
Splash Page Custom Link --None--

Enter a short description.

Description

Save Cancel

Lightning App Builder App Settings Comment Box App

App Details & Branding

App Options

Utility Items (Desktop Only)

Navigation Items

User Profiles

App Details & Branding

Give your Lightning app a name and description. Upload an image and choose the highlight color for its navigation bar.

App Details

* App Name

* Developer Name

Description

App Branding

Image Primary Color Hex Value

 Clear

Org Theme Options Use the app's image and color instead of the org's custom theme

App Launcher Preview

 Comment Box App

Setup Home

Service Setup Assistant

Multi-Factor Authentication Assistant

Release Updates

Lightning Experience Transition Assistant

New Salesforce Mobile App QuickStart

Lightning Usage

Optimizer

ADMINISTRATION

> Users

> Data

> Email

PLATFORM TOOLS

< Apps

App Manager

AppExchange Marketplace

> Connected Apps

File

Quick Find

Search Setup

SETUP

Lightning Experience App Manager

New Lightning App | New Connected App

28 items • Sorted by App Name • Filtered by All appmenuitems - TabSet Type

App Name ↑	Developer Name	Description	Last Modified ...	App Type	Vi...
1 All Tabs	AllTabSet	Build Tableau CRM dashboards and apps	3/29/2022, 11:32 P...	Classic	✓
2 Analytics Studio	Insights	The Force.com Migration Tool is a Java/Ant-based command-line utility for moving...	3/29/2022, 11:32 P...	Classic	✓
3 Ant Migration Tool	Forcecom_Migration_Tool	Discover and manage business solutions designed for your industry.	3/29/2022, 11:32 P...	Connected (Managed)	✓
4 App Launcher	AppLauncher	App Launcher tabs	3/29/2022, 11:32 P...	Classic	✓
5 Bolt Solutions	LightningBolt	Comment Box App	3/29/2022, 11:32 P...	Lightning	✓
6 Comment Box App	Comment_Box_App	Manage your store's products, catalogs, and pricebooks.	3/29/2022, 11:54 P...	Lightning	✓
7 Commerce	Commerce	Salesforce CRM Communities	3/29/2022, 11:32 P...	Classic	✓
8 Community	Community	Salesforce CRM Content	3/29/2022, 11:32 P...	Classic	✓
9 Content	Content	The Data Loader is an easy to use graphical tool that helps you to get your data i...	3/29/2022, 11:32 P...	Connected (Managed)	✓
10 Dataloader Bulk	Dataloader_Bulk	The Data Loader is an easy to use graphical tool that helps you to get your data i...	3/29/2022, 11:32 P...	Connected (Managed)	✓
11 Dataloader Partner	Dataloader_Partner	Manage content and media for all of your sites.	3/29/2022, 11:32 P...	Lightning	✓
12 Digital Experiences	SalesforceCMS	The Force.com IDE is a powerful client application for creating, modifying, testing ...	3/29/2022, 11:32 P...	Connected (Managed)	✓
13 Force.com IDE	Forcecom_IDE	View Adoption and Usage Metrics for Lightning Experience	3/29/2022, 11:32 P...	Lightning	✓
14 Lightning Usage A...	LightningInstrumentation	Well, this is awkward. This app doesn't have any navigation items, or you can't access them.	3/29/2022, 11:32 P...	Classic	✓

All ▾

Comment Box App

No Items

Search...



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