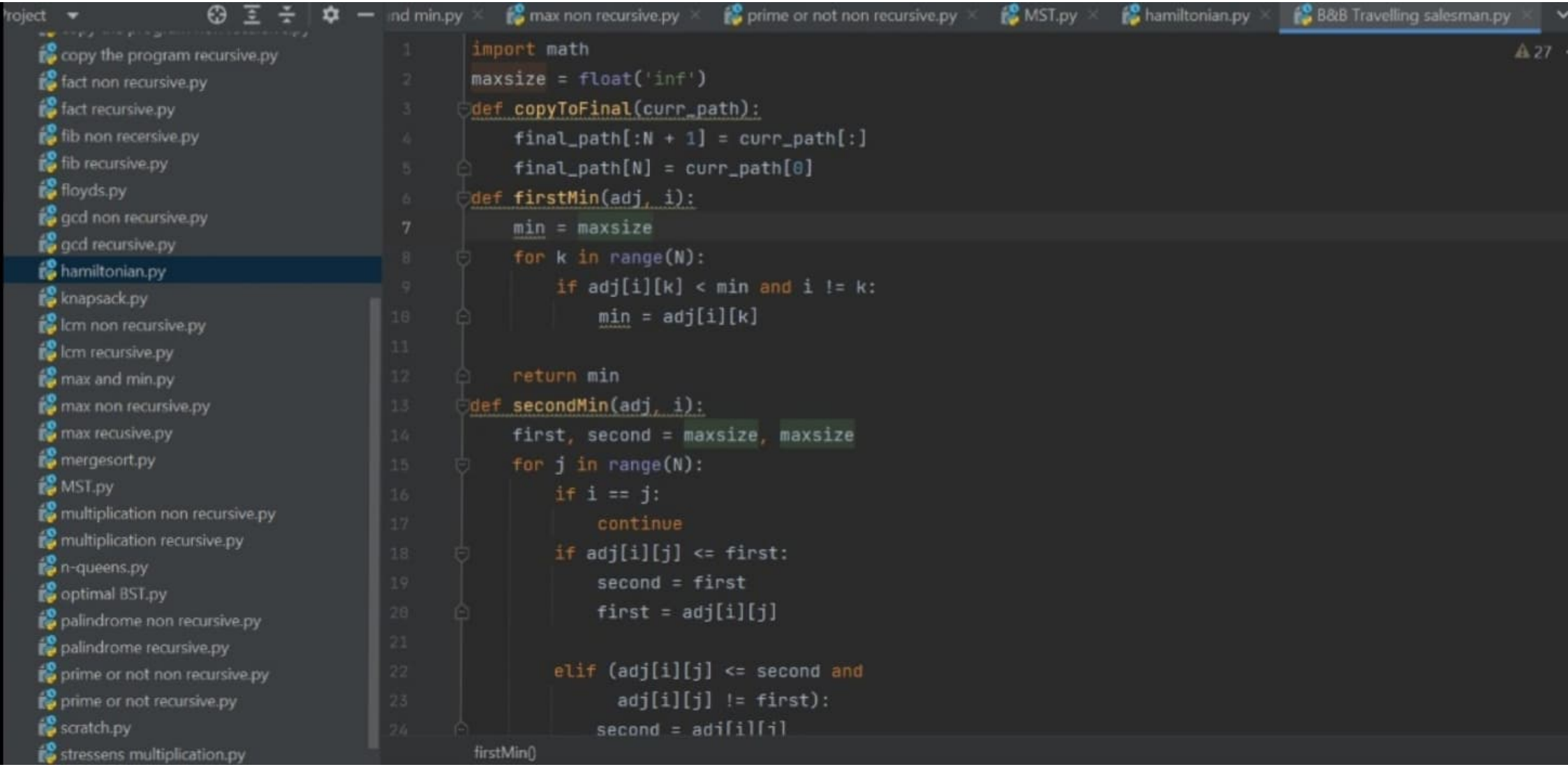
Project
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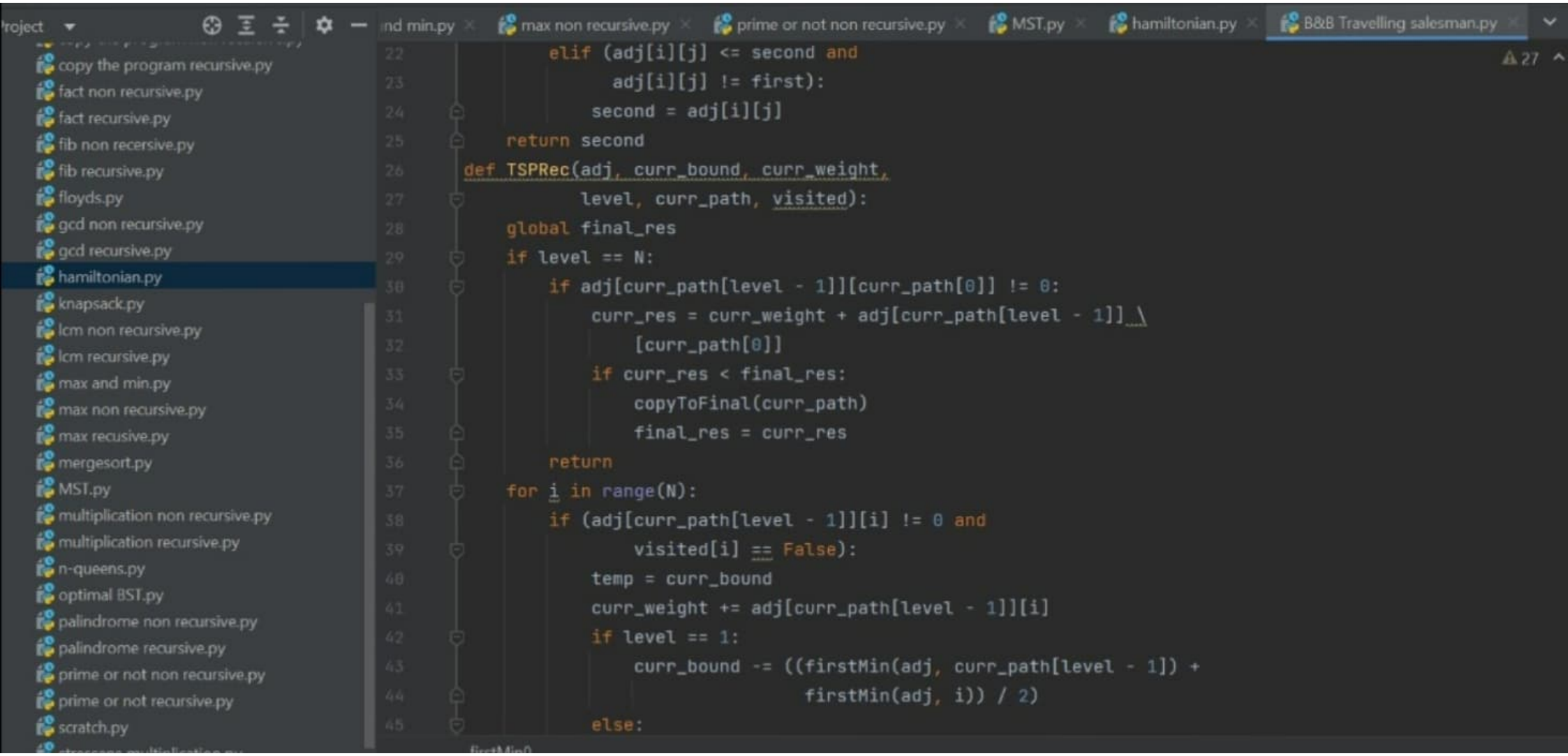
27
import math
maxsize = float('inf')
def copyToFinal(curr_path):
final_path[:N + 1] = curr_path[:]
final_path[N] = curr_path[0]
def firstMin(adj, i):
min = maxsize
for k in range(N):
if adj[i][k] < min and i != k:
min = adj[i][k]
return min
def secondMin(adj, i):
first, second = maxsize, maxsize
for j in range(N):
if i == j:
continue
if adj[i][j] <= first:
second = first
first = adj[i][j]
elif (adj[i][j] <= second and
adj[i][j] != first):
firstMin()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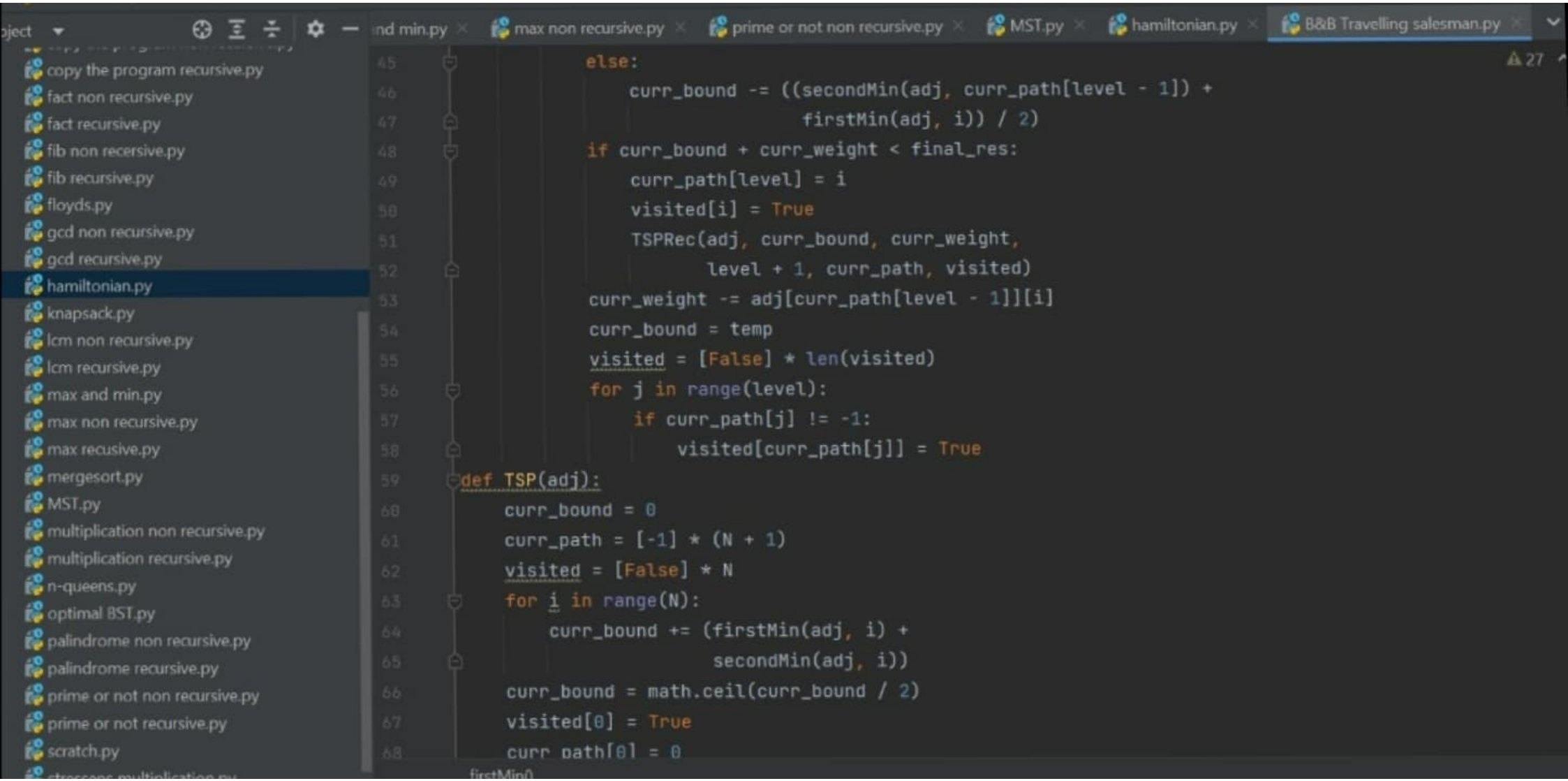
elif (adj[i][j] <= second and
adj[i][j] != first):
second = adj[i][j]
return second
def TSPRec(adj, curr_bound, curr_weight,
level, curr_path, visited):
global final_res
if level == N:
if adj[curr_path[level - 1]][curr_path[0]] != 0:
curr_res = curr_weight + adj[curr_path[level - 1]]\
[curr_path[0]]
if curr_res < final_res:
copyToFinal(curr_path)
final_res = curr_res
return
for i in range(N):
if (adj[curr_path[level - 1]][i] != 0 and
visited[i] == False):
temp = curr_bound
curr_weight += adj[curr_path[level - 1]][i]
if level == 1:
curr_bound -= ((firstMin(adj, curr_path[level - 1]) +
firstMin(adj, i)) / 2)
else: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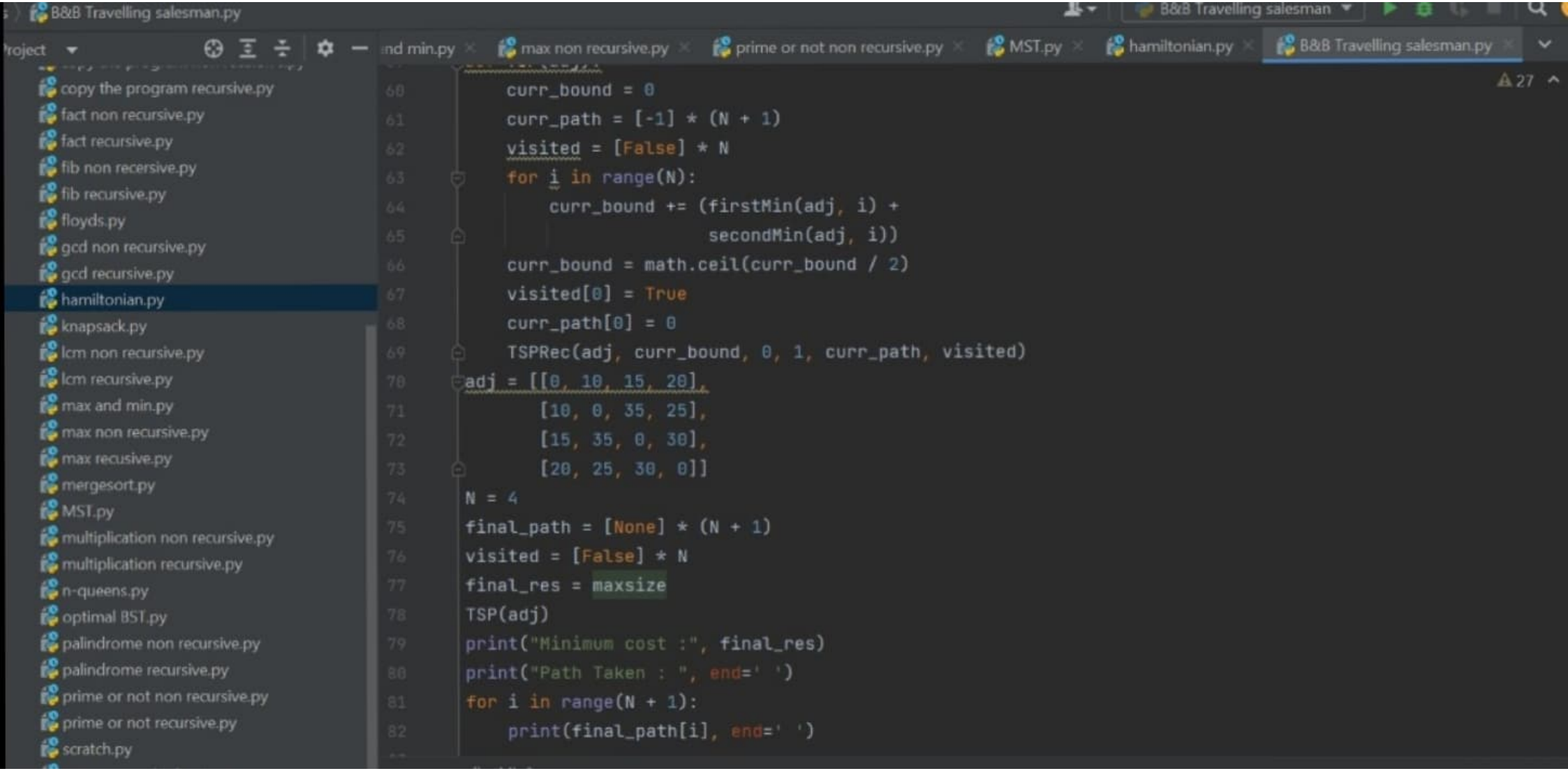
else:
curr_bound -= ((secondMin(adj, curr_path[level - 1]) +
firstMin(adj, i)) / 2)
if curr_bound + curr_weight < final_res:
curr_path[level] = i
visited[i] = True
TSPRec(adj, curr_bound, curr_weight,
level + 1, curr_path, visited)
curr_weight -= adj[curr_path[level - 1]][i]
curr_bound = temp
visited = [False] * len(visited)
for j in range(level):
if curr_path[j] != -1:
visited[curr_path[j]] = True
def TSP(adj):
curr_bound = 0
curr_path = [-1] * (N + 1)
visited = [False] * N
for i in range(N):
curr_bound += (firstMin(adj, i) +
secondMin(adj, i))
curr_bound = math.ceil(curr_bound / 2)
visited[0] = True
curr_path[0] = 0
firstMin()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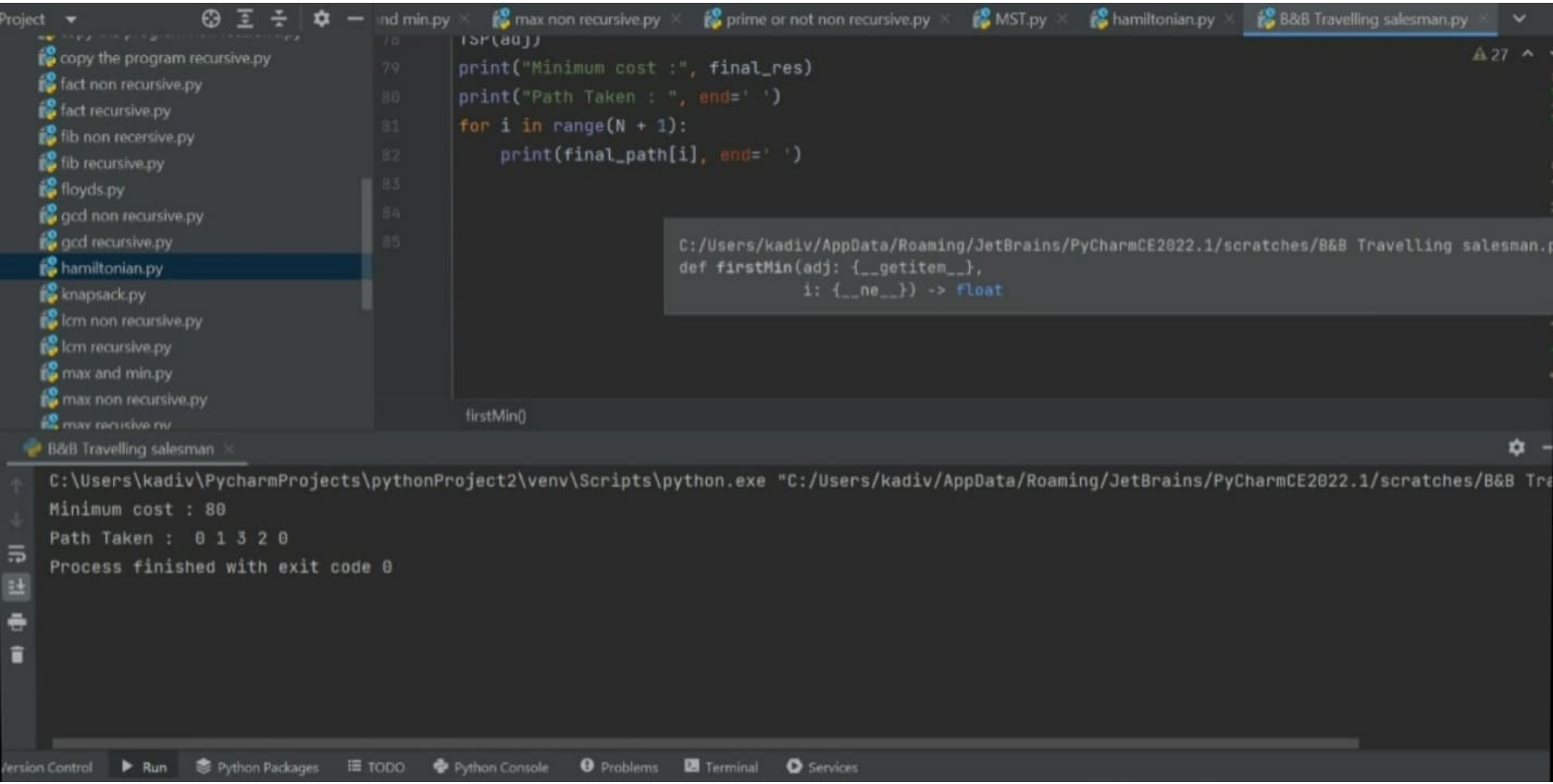
curr_bound = 0
curr_path = [-1] * (N + 1)
visited = [False] * N
for i in range(N):
curr_bound += (firstMin(adj, i) +
secondMin(adj, i))
curr_bound = math.ceil(curr_bound / 2)
visited[0] = True
curr_path[0] = 0
TSPRec(adj, curr_bound, 0, 1, curr_path, visited)
adj = [[0, 10, 15, 20],
[10, 0, 35, 25],
[15, 35, 0, 30],
[20, 25, 30, 0]]
N = 4
final_path = [None] * (N + 1)
visited = [False] * N
final_res = maxsize
TSP(adj)
print("Minimum cost :", final_res)
print("Path Taken : ", end=' ')
for i in range(N + 1):
print(final_path[i], end=' ')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print("Minimum cost :", final_res)
print("Path Taken : ", end=' ')
for i in range(N + 1):
print(final_path[i], end=' ')
C:/Users/kadiv/AppData/Roaming/JetBrains/PyCharmCE2022.1/scratches/B&B Travelling salesman.
def firstMin(adj: {__getitem__},
i: {__ne__}) -> float
firstMin()
B&B Travelling salesman
C:\Users\kadiv\PycharmProjects\pythonProject2\venv\Scripts\python.exe "C:/Users/kadiv/AppData/Roaming/JetBrains/PyCharmCE2022.1/scratches/B&B Tra
Minimum cost : 80
Path Taken : 0 1 3 2 0
Process finished with exit code 0
Version Control
Run
Python Packages
TODO
Python Console
Problems
Terminal
Services