User Manual & How to Run Code For Electric Vehicle Program

1. *List of variables used in the codea and their corresponding symbols.*

Sr.	VARIABLE	SYMBOL
1	Number of cities	n
2	Adjacency matrix	G
3	Number of electric vehicles	k
4	Start node of a vehicle(S_r)	u
5	End node of a vehicle(D_r)	end
6	2-D array to store the optimal path of each vehicle	v
7	Array to store the entry time of each node in the path of each vehicle	start_time
8	Array to store the exit time of each node in the path of each vehicle	end_time
9	Array to store the minimum time taken by each vehicle to go from its source to destination	ans
10	Array to store the average speed of traveling of each vehicle	speed
11	Array to store the maximum capacity of battery of each vehicle	max_capacity
12	Array to store the discharging rate of each vehicle	discharge
14	Array to store the charging rate of each vehicle	charging
15	Array to store the initial battery status of each vehicle	initial_battery
16	Vehicle number	count

2. **Sequence of Inputs**:
    a. Enter number of cities (n)
    b. Enter the adjacency matrix (G)
    c. Enter number of Electric vehicles (k)
    d. For each electric vehicle
        i. Enter initial battery status
        ii. Enter charging rate for battery
        iii. Enter discharging rate of battery
        iv. Enter maximum battery capacity
        v. Enter average travelling time
        vi. Enter the starting city number
        vii. Enter the destination city number
3. **Output** :
   The optimum time required so that all the vehicles are routed from their respective sources to destinations such that max{Tr} is minimized

EXAMPLE:

1. **Input:**
   Enter no. of vertices : 9
   Enter no. of adjacency matrix:
   0 4 0 0 0 0 0 8 0
   4 0 8 0 0 0 0 11 0
   0 8 0 7 0 4 0 0 2
   0 0 7 0 9 14 0 0 0
   0 0 0 9 0 10 0 0 0
   0 0 4 14 10 0 2 0 0
   0 0 0 0 0 2 0 1 6
   0 11 0 0 0 0 1 0 7
   0 0 2 0 0 0 6 7 0

   Enter no. of electric vehicles: 3

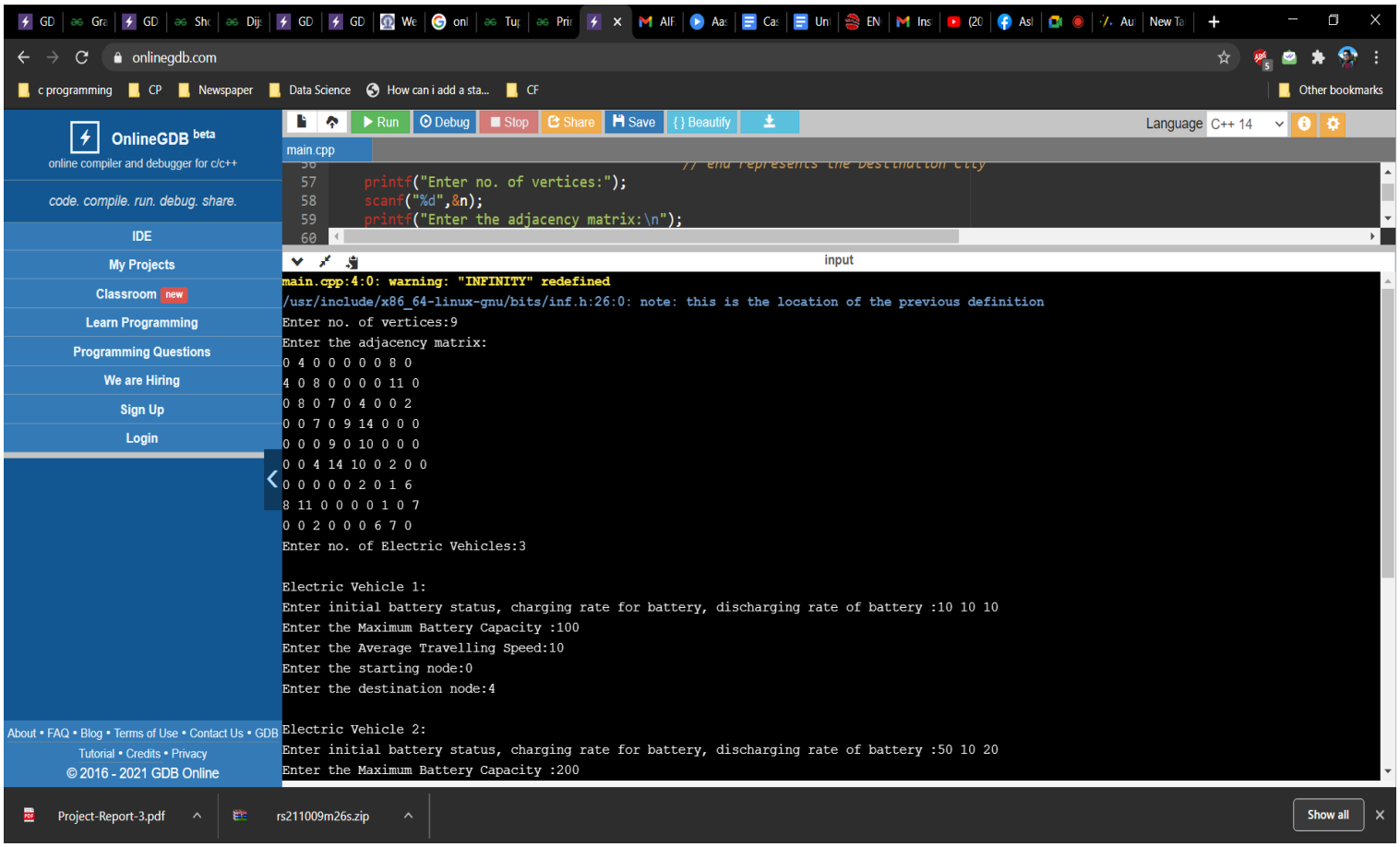
   Electric Vehicle 1:
   Enter initial battery status,charging rate for battery, discharging rate of battery: 10 10 10
   Enter the maximum battery capacity: 100

Enter the average travelling speed: 10
Enter the starting node: 0
Enter the destination node: 4

Electric Vehicle 2:
Enter initial battery status,charging rate for battery, discharging rate of battery: 50 10 20
Enter the maximum battery capacity: 200
Enter the average travelling speed: 40
Enter the starting node: 1
Enter the destination node: 8

Electric Vehicle 3:
Enter initial battery status,charging rate for battery, discharging rate of battery: 5 2 1
Enter the maximum battery capacity: 50
Enter the average travelling speed: 5
Enter the starting node: 3
Enter the destination node: 7

2. **Output:**
   The optimum time required is 112.1 (in seconds)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Language C++ 14
main.cpp
57 printf("Enter no. of vertices:");
58 scanf("%d",&n);
59 printf("Enter the adjacency matrix:\n");
60
input
main.cpp:4:0: warning: "INFINITY" redefined
/usr/include/x86_64-linux-gnu/bits/inf.h:26:0: note: this is the location of the previous definition
Enter no. of vertices:9
Enter the adjacency matrix:
0 4 0 0 0 0 0 8 0
4 0 8 0 0 0 0 11 0
0 8 0 7 0 4 0 0 2
0 0 7 0 9 14 0 0 0
0 0 0 9 0 10 0 0 0
0 0 4 14 10 0 2 0 0
0 0 0 0 0 2 0 1 6
8 11 0 0 0 0 1 0 7
0 0 2 0 0 0 6 7 0
Enter no. of Electric Vehicles:3
Electric Vehicle 1:
Enter initial battery status, charging rate for battery, discharging rate of battery :10 10 10
Enter the Maximum Battery Capacity :100
Enter the Average Travelling Speed:10
Enter the starting node:0
Enter the destination node:4
Electric Vehicle 2:
Enter initial battery status, charging rate for battery, discharging rate of battery :50 10 20
Enter the Maximum Battery Capacity :200
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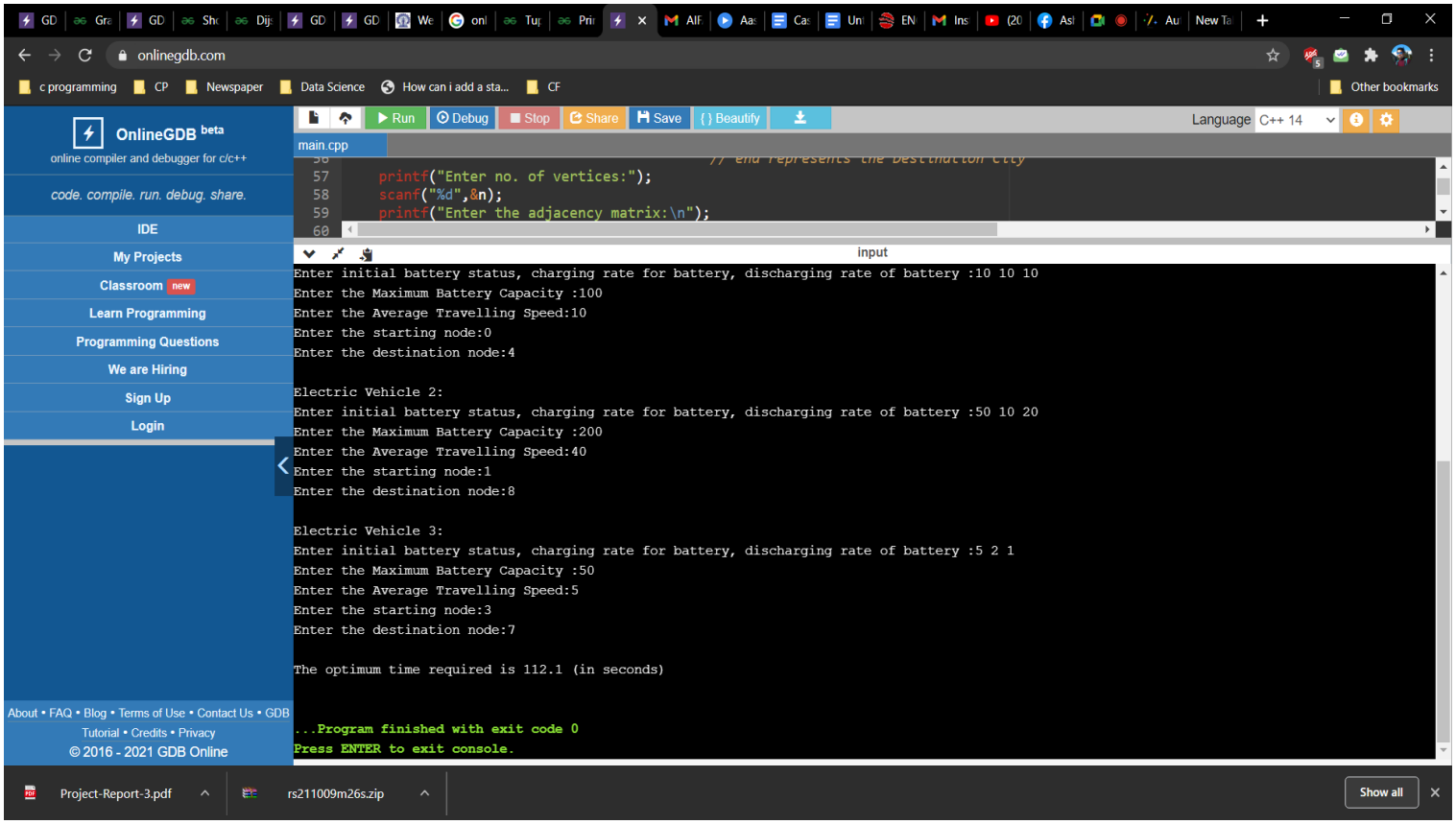
Show all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Debug
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{ } Beautify
Language C++ 14
main.cpp
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58 scanf("%d",&n);
59 printf("Enter the adjacency matrix:\n");
60
input
Enter initial battery status, charging rate for battery, discharging rate of battery :10 10 10
Enter the Maximum Battery Capacity :100
Enter the Average Travelling Speed:10
Enter the starting node:0
Enter the destination node:4
Electric Vehicle 2:
Enter initial battery status, charging rate for battery, discharging rate of battery :50 10 20
Enter the Maximum Battery Capacity :200
Enter the Average Travelling Speed:40
Enter the starting node:1
Enter the destination node:8
Electric Vehicle 3:
Enter initial battery status, charging rate for battery, discharging rate of battery :5 2 1
Enter the Maximum Battery Capacity :50
Enter the Average Travelling Speed:5
Enter the starting node:3
Enter the destination node:7
The optimum time required is 112.1 (in seconds)
...Program finished with exit code 0
Press ENTER to exit console.
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Show all