AA

Assignment 4

Answer 1

- Create a Graph G of n vertices and r edges where each vertex represents a wrestler and each edge represent a rivarly.

- Perform BFS traversal till all the vertices have been visited.

- Wrestlers having even distance and professional wrestlers having odd distance are designated as babyfaces and heels.

- Assign wrestlers having even distance as babyfaces and wrestlers having odd distance as heels.

- Check each edge to verify if it goes between a babyface and a heel. If it does then there is a rivarly.

Time taken overall :- $O(n+r)$.

Name: Muhammad Uzair   Section - F

Roll No. LIF18BSCS0311

Answer 2

- We ave given a map, where every node is representing a position along with a list of safe nodes.

- Create a variable checkMinimum to store the minimum distance.

- Check the current position to find the closest safest point.

- Suppose current position is C.

- Perform BFS traversal.

- All the neighbours of C are now in stack.

- Now check if the first neighbour is a safe point. If it is, then closest safest point has been found else perform BFS (continue) and if safe point is found, then store it in checkMinimum.

- When a child having distance less than checkMinimum is found, then update the value in checkMinimum.

- After all the positions have been traversed, checkMinimum will hold the minimum distance

Name: Muhammad Uzair   Section-F

Roll No. LIFI8BSCS0311

value.

- Now again perform BFS, and check which safe node has distance equal to checkMinimum.
- Closest safe point has been found.

Answer 3

- We are given a Graph G with n vertices and e edges.
- We will create two variables max and min and initialize them with 0.
- Now we will perform BFS traversal for each node.
- Before the previous step, create a variable count and initialize it with 0.
- Perform BFS for each node and increment the count variable.
- Store the maximum distance in max of the selected node.
- Check if count is equal to 1, then put value of max in min, else check if max is less than min then update min and put

Name: Muhammad Uzair

Section-F

Roll No. LIF18BSCS0311

the value of max in min.

• When all the nodes have been traversed as the selected vertex, min will contain the minimum maximum distance.

• ~~Now create a tempMin variable and initialize it to 0.~~

• Perform BFS traversal again. For every node until max is equal to min.

• Then the center vertex will be found.

Time Complexity :- $O(n+e) + O(n+e)$

$$= O(n+e).$$