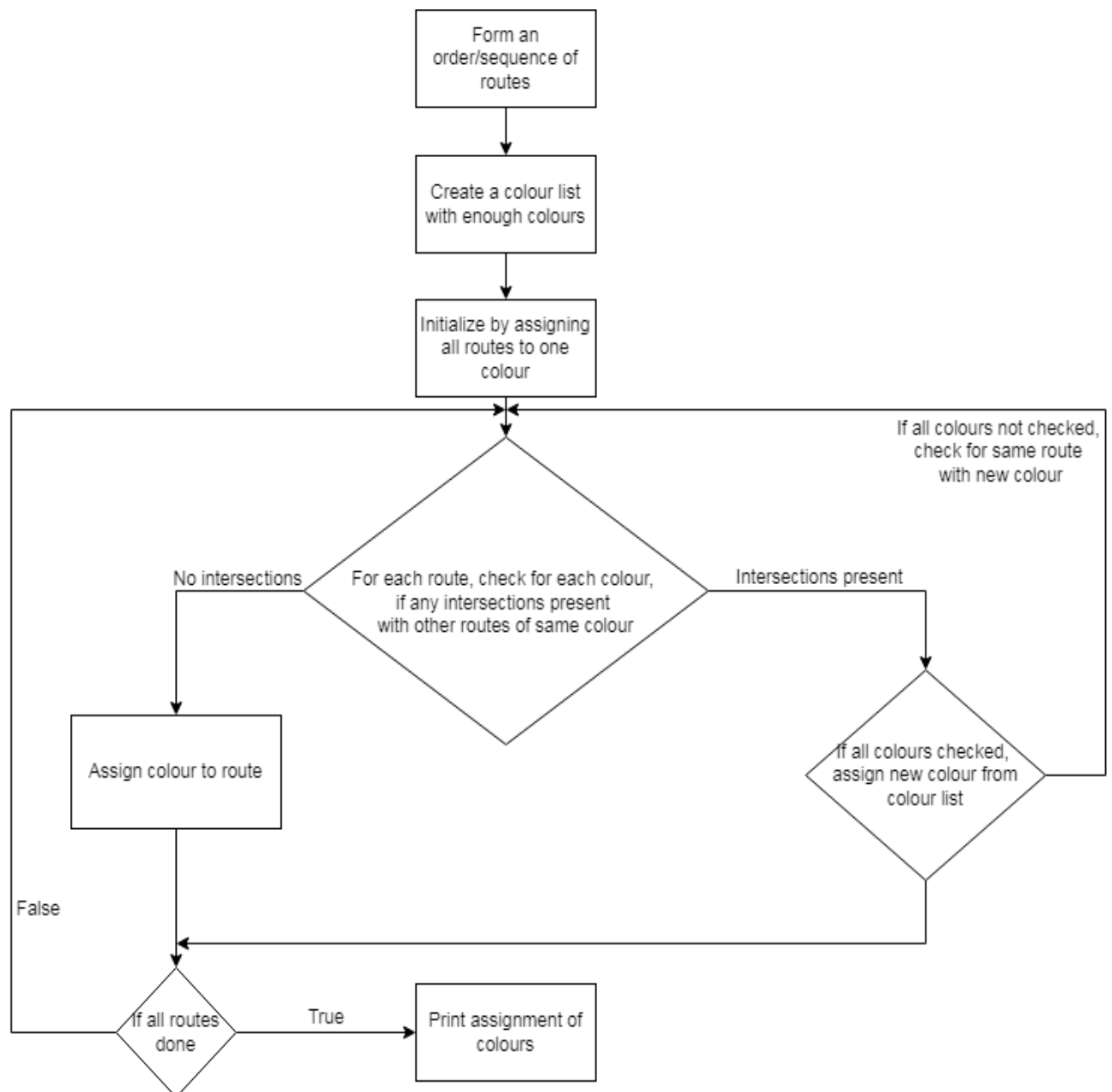


Question 1

```
{'M6': 'red',  
  'M2': 'red',  
  'M5': 'green',  
  'M1': 'blue',  
  'M8': 'yellow',  
  '60': 'pink',  
  'M10': 'orange',  
  '12': 'blue',  
  'M17': 'black',  
  '16': 'red',  
  'M13': 'green',  
  '18': 'red',  
  '21': 'blue',  
  '27': 'orange',  
  '37': 'red',  
  '50': 'green',  
  'M4': 'yellow',  
  '61': 'red',  
  '62': 'green',  
  '63': 'blue',  
  '67': 'pink',  
  '68': 'orange'}
```

Total seven colour are used

Question 2



Question 3

The code has been provided.

Question 4

Yes, the solution will work for the case where the route data is provided to us one at a time.

When a new route is provided to the program, the algorithm checks for each colour, whether this new route will have intersections with existing routes in the map. If it doesn't have intersections for some colour, that colour is assigned to this new route. If no such colour exists, then a new colour is taken from the colour list and assigned to this new route. Thus, our algorithm does work for this case.

Question 5

No, that is not necessarily true. If the previous $n-1$ routes don't all intersect each other, the n th route doesn't need to be colour n .

Example:

