Q1:

a) Open data falls under source-wise data categorization, where the data is available for everyone to use.
   i) When you sign up for a media platform, you fill out many placeholders that ask for your name, email, date of birth, phone number, ethnicity, address, and other information that you're willing to share voluntarily. You also specifically allow which information can be showcased in your profile, giving access to the other users in the platform to locate you. These accessible data in those platforms are a form of open data.

b)
   i) Sensor malfunctioning + some attributes may be included/excluded after the start of the recording.
   ii) Data Imputation with average, median, zero, or default values.
      1) Assuming that the data comes from a distribution. Replacing them with mean/ median won't affect that distribution.
      2) The same is true for zero and default values. We hope this doesn't hinder the analysis.
      3) Risks are ignoring outliers and overfitting.
   iii) Expectation maximization:
      1) Assumption: If the missing values are not relevant, completely discard them.
      2) Assumption: If they are relevant, create a new dataset with the maximum likelihood method.
      3) Risk: It takes a longer time to converge.

c)

d)

Q2:

Transition Model:
Action Cost:

States: 1. Initial State: 2. Goal State:	 a = [10, 20, 40, 30, 1] a = [1, 10, 20, 30, 40]

Actions:
1. Transition Model:
2. Action Cost:
	
	for i = 0 to i < a.size:
	  for j = i+1 to j < a.size:
	  if a[j] < a[i]:

	temp = a[i] a[i] = a[j] a[j] = temp 1. a = [1, 20, 40, 30, 10] 2. 1 x (n-1) // n == 5 3. a = [1, 10, 40, 30, 20] 4. 1 x (n-2) 5. a = [1, 10, 20, 30, 40] 6. 1 x (n-3) 7. a = [1, 10, 20, 30, 40] 8. 1 x (n-4) 9. Total Cost: 1 x (n-1) + 1 x (n-2) + 1 x (n-3) +1 x (n-4) = 4n = 4 x 5 = 20 ~ n^2

b)

```
bool goalTest(a[]):
        for int i = 0; i < a.size - 1; i++:
                if a[i] > a[i+1]:
                        return false;
        return true;
```

Q3:

drive: https://drive.google.com/drive/folders/1HwVLmTJRu-9sHQqW215yE52OdS40_R_e
git: https://github.com/Initiated0/CSCE580-Fall2024-nayeem-Repo/tree/main/resume-exercise/src

Q4:

git: https://github.com/Initiated0/CSCE580-Fall2024-nayeem-Repo/tree/main/Quizzes