



| 3                  | a          | Explain decision tree algorithm using the table given below.  | 10       | 20         |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
|--------------------|------------|---|----------|------------|--------|----------|-------|-----|-------|-------|-------|-----|--------|-------|-------|-----|-------|-------|-------|-----|--------|-------|-------|------|------|-------|-------|------|--------|-------|-------|-----|------|-------|-------|-----|--------|-------|-------|-----|------|-------|-------|-----|--------|-------|-------|------|------|-------|-------|------|--------|-------|-------|-----|------|-------|-------|-----|--------|-------|-------|-----|------|-------|-------|-----|--------|-------|-------|------|------|-------|-------|------|--------|-------|-------|-----|------|-------|-------|-----|--------|-------|-------|-----|------|-------|-------|-----|--------|-------|-------|------|------|-------|-------|------|--------|-------|----|--|
|                    |            | <table><thead><tr><th>Age</th><th>Experience</th><th>Gender</th><th>Salary</th></tr></thead><tbody><tr><td>20-30</td><td>Low</td><td>Male</td><td>25000</td></tr><tr><td>20-30</td><td>Low</td><td>Female</td><td>20000</td></tr><tr><td>20-30</td><td>Mid</td><td>Male</td><td>30000</td></tr><tr><td>20-30</td><td>Mid</td><td>Female</td><td>25000</td></tr><tr><td>20-30</td><td>High</td><td>Male</td><td>35000</td></tr><tr><td>20-30</td><td>High</td><td>Female</td><td>30000</td></tr><tr><td>30-40</td><td>Low</td><td>Male</td><td>30000</td></tr><tr><td>30-40</td><td>Low</td><td>Female</td><td>25000</td></tr><tr><td>30-40</td><td>Mid</td><td>Male</td><td>35000</td></tr><tr><td>30-40</td><td>Mid</td><td>Female</td><td>30000</td></tr><tr><td>30-40</td><td>High</td><td>Male</td><td>40000</td></tr><tr><td>30-40</td><td>High</td><td>Female</td><td>35000</td></tr><tr><td>40-50</td><td>Low</td><td>Male</td><td>35000</td></tr><tr><td>40-50</td><td>Low</td><td>Female</td><td>30000</td></tr><tr><td>40-50</td><td>Mid</td><td>Male</td><td>40000</td></tr><tr><td>40-50</td><td>Mid</td><td>Female</td><td>35000</td></tr><tr><td>40-50</td><td>High</td><td>Male</td><td>45000</td></tr><tr><td>40-50</td><td>High</td><td>Female</td><td>40000</td></tr><tr><td>50-60</td><td>Low</td><td>Male</td><td>40000</td></tr><tr><td>50-60</td><td>Low</td><td>Female</td><td>35000</td></tr><tr><td>50-60</td><td>Mid</td><td>Male</td><td>45000</td></tr><tr><td>50-60</td><td>Mid</td><td>Female</td><td>40000</td></tr><tr><td>50-60</td><td>High</td><td>Male</td><td>50000</td></tr><tr><td>50-60</td><td>High</td><td>Female</td><td>45000</td></tr></tbody></table> | Age      | Experience | Gender | Salary   | 20-30 | Low | Male  | 25000 | 20-30 | Low | Female | 20000 | 20-30 | Mid | Male  | 30000 | 20-30 | Mid | Female | 25000 | 20-30 | High | Male | 35000 | 20-30 | High | Female | 30000 | 30-40 | Low | Male | 30000 | 30-40 | Low | Female | 25000 | 30-40 | Mid | Male | 35000 | 30-40 | Mid | Female | 30000 | 30-40 | High | Male | 40000 | 30-40 | High | Female | 35000 | 40-50 | Low | Male | 35000 | 40-50 | Low | Female | 30000 | 40-50 | Mid | Male | 40000 | 40-50 | Mid | Female | 35000 | 40-50 | High | Male | 45000 | 40-50 | High | Female | 40000 | 50-60 | Low | Male | 40000 | 50-60 | Low | Female | 35000 | 50-60 | Mid | Male | 45000 | 50-60 | Mid | Female | 40000 | 50-60 | High | Male | 50000 | 50-60 | High | Female | 45000 | 10 |  |
| Age                | Experience | Gender  | Salary   |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 20-30              | Low        | Male  | 25000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 20-30              | Low        | Female  | 20000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 20-30              | Mid        | Male  | 30000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 20-30              | Mid        | Female  | 25000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 20-30              | High       | Male  | 35000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 20-30              | High       | Female  | 30000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 30-40              | Low        | Male  | 30000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 30-40              | Low        | Female  | 25000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 30-40              | Mid        | Male  | 35000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 30-40              | Mid        | Female  | 30000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 30-40              | High       | Male  | 40000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 30-40              | High       | Female  | 35000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 40-50              | Low        | Male  | 35000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 40-50              | Low        | Female  | 30000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 40-50              | Mid        | Male  | 40000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 40-50              | Mid        | Female  | 35000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 40-50              | High       | Male  | 45000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 40-50              | High       | Female  | 40000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 50-60              | Low        | Male  | 40000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 50-60              | Low        | Female  | 35000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 50-60              | Mid        | Male  | 45000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 50-60              | Mid        | Female  | 40000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 50-60              | High       | Male  | 50000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 50-60              | High       | Female  | 45000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| <b>Subquestion</b> |            |   |          |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| 4                  | a          | Explain decision tree algorithm using the table given below.  | 10       | 20         |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
|                    |            | <table><thead><tr><th>Customer</th><th>Age</th><th>Income</th><th>Spending</th></tr></thead><tbody><tr><td>a</td><td>20</td><td>10000</td><td>10000</td></tr><tr><td>b</td><td>30</td><td>15000</td><td>15000</td></tr><tr><td>c</td><td>40</td><td>20000</td><td>20000</td></tr><tr><td>d</td><td>50</td><td>25000</td><td>25000</td></tr></tbody></table>   | Customer | Age        | Income | Spending | a     | 20  | 10000 | 10000 | b     | 30  | 15000  | 15000 | c     | 40  | 20000 | 20000 | d     | 50  | 25000  | 25000 | 10    |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| Customer           | Age        | Income  | Spending |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| a                  | 20         | 10000   | 10000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| b                  | 30         | 15000   | 15000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| c                  | 40         | 20000   | 20000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| d                  | 50         | 25000   | 25000    |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |
| ALL THIS ABOUT     |            |   |          |            |        |          |       |     |       |       |       |     |        |       |       |     |       |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |       |     |      |       |       |     |        |       |       |     |      |       |       |     |        |       |       |      |      |       |       |      |        |       |    |  |