CS 539 HW 1

Task 2-1

Decision Tree:

```
Income == high: low
Income == medium: low
Income == low
    Married == yes: high
    Married == no
        Debt == low: low
        Debt == high: low
        Debt == medium
            Gender == male: high
            Gender == female: low
```

Prediction for Tom:
Given this record:

- Debt = low
- Income = low
- Married = no
- Owns Property = yes
- Gender = male

Tom's Risk = low

Prediction for Ana:
Given this record:

- Debt = low
- Income = medium
- Married = yes
- Owns Property = yes
- Gender = female

Ana's Risk = low

Task 2-2

New decision tree:

```
Income == high: low
Income == medium: low
Income == low
    Debt == high: high
    Debt == medium: high
    Debt == low
        Married == no: low
        Married == yes: high
```

In the original dataset, the "Owns_Property" feature did not contribute to the decision tree. Upon changing Sofia’s credit risk to a value of high, we now rule out another feature: gender. This feature became less significant in terms of its entropy, essentially minimizing how significant or unexpected it is, given all of the other variables we have.