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HW1 Part2

Library used: scikit-learn.

Criteria used: entropy.

Risk: 0=low, 2=high

Debt: 0=low, 1=medium, 2=high

Income: 0=low, 1=medium, 2=high

Married: 0=no, 1=yes

Owns_Property: 0=no, 1=yes

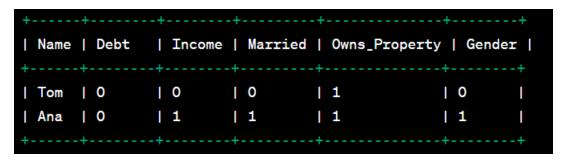
Gender: 0=male, 1=female

Thus, given train data after encoding:

For part2.2 we are only changing value from '0' to '2'.

+	-+	+	+		+		+		+		+	
Name	Deb	t I	Income	Ī	Married	I	Owns_Propert	y	Gende		Risk	c
+	-+	+	+		+		+		+		+	
Tim	0	-1	0	I	0	I	0	I	0	I	0	1
Joe	2	-1	2	1	1	I	1	1	0	I	0	1
Sue	0	-1	2	1	1	I	0	I	1	I	0	1
John	1	-1	0	1	0	I	0	1	0	I	2	1
Mary	2	- 1	0	1	1	I	0	1	1	I	2	
Fred	0	- 1	0	1	1	I	0	1	0	I	2	I
Pete	0	- 1	1	1	0	I	1	1	0	I	0	I
Jacob	2	-	1	1	1	I	1	I	0	١	0	I
Sofia	1	I	0	I	0	I	0	I	1		2	I
+	-+	+	+		+	-	+		+		+	

Thus, Test data after encoding:



Output1: Decision tree when Sofia's risk is low/0:

Prediction when Sofia's risk is low/0:

```
Tom's predicted credit risk: 0
Ana's predicted credit risk: 0
```

this means: Credit Risk (Tom) = Low Credit Risk (Ana) = Low

Output2: Decision tree when Sofia's risk is high/2:

As we can see Sofia's Credit Risk is changed to 'High' from 'Low', feature attribute 'Gender' is no longer exist in the Decision Tree.

Prediction when Sofia's risk is high/2:

```
Tom's predicted credit risk: 0
Ana's predicted credit risk: 0
```

this means: Credit Risk (Tom) = Low Credit Risk (Ana) = Low

Also, in both decision trees, 'Owns_Property' plays no role in decision tree formation.