ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$$Gini(D) = 1 - \left(\frac{6}{10}\right)^2 - \left(\frac{4}{10}\right)^2 = 0.480$$ => ادامه می‌دهیم

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$$GiniJob(D) = \frac{7}{10} \times \left(1 - \left(\frac{4}{7}\right)^2 - \left(\frac{3}{7}\right)^2\right) + \frac{3}{10} \times \left(1 - \left(\frac{0}{3}\right)^2 - \left(\frac{3}{3}\right)^2\right) = 0.343$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$$GiniHouse(D)=\frac{5}{10}\times\left(1-\left(\frac{4}{5}\right)^2-\left(\frac{1}{5}\right)^2\right)+\frac{5}{10}\times\left(1-\left(\frac{0}{5}\right)^2-\left(\frac{5}{5}\right)^2\right)=0.160$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$\{Old\},\{Middle,Young\}$

$$GiniAge(D)=\frac{3}{10}\times\left(1-\left(\frac{1}{3}\right)^2-\left(\frac{2}{3}\right)^2\right)+\frac{7}{10}\times\left(1-\left(\frac{3}{7}\right)^2-\left(\frac{4}{7}\right)^2\right)=0.476$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$\{Middle\},\{Old,\ Young\}$

$$GiniAge(D)=\frac{4}{10}\times\left(1-\left(\frac{2}{4}\right)^2-\left(\frac{2}{4}\right)^2\right)+\frac{6}{10}\times\left(1-\left(\frac{2}{6}\right)^2-\left(\frac{4}{6}\right)^2\right)=0.467$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$\{Young\},\{Middle,Old\}$

$$GiniAge(D)=\frac{3}{10}\times\left(1-\left(\frac{1}{3}\right)^2-\left(\frac{2}{3}\right)^2\right)+\frac{7}{10}\times\left(1-\left(\frac{3}{7}\right)^2-\left(\frac{4}{7}\right)^2\right)=0.476$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$\{Excellent\},\{Good, Fair\}$

$$GiniCredit(D)=\frac{2}{10}\times\left(1-\left(\frac{0}{2}\right)^2-\left(\frac{2}{2}\right)^2\right)+\frac{8}{10}\times\left(1-\left(\frac{4}{8}\right)^2-\left(\frac{4}{8}\right)^2\right)=0.400$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$\{Good\},\{Excellent, Fair\}$

$$GiniCredit(D)=\frac{4}{10}\times\left(1-\left(\frac{1}{4}\right)^2-\left(\frac{3}{4}\right)^2\right)+\frac{6}{10}\times\left(1-\left(\frac{3}{6}\right)^2-\left(\frac{3}{6}\right)^2\right)=0.450$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
3	Middle	False	False	Fair	No
4	Middle	True	True	Good	Yes
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
7	Middle	False	True	Excellent	Yes
8	Young	True	False	Good	Yes
9	Young	True	True	Fair	Yes
10	Middle	False	False	Good	No

$\{Fair\},\{Excellent,Good\}$

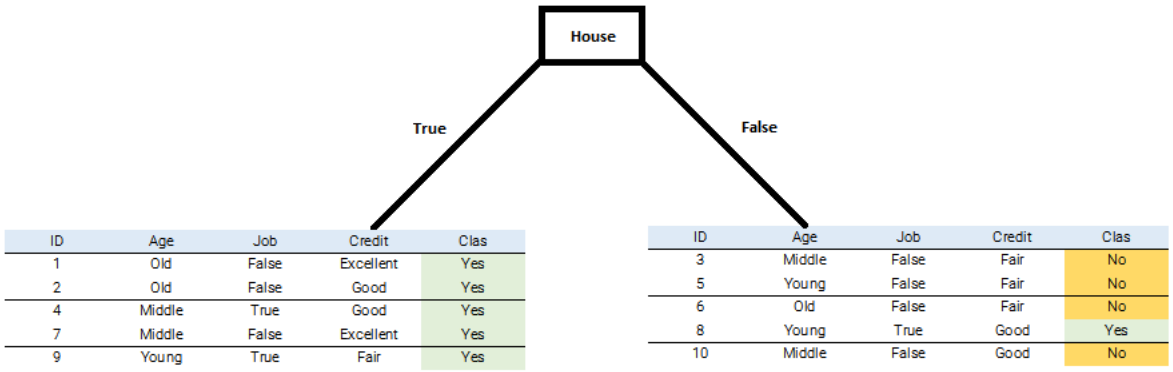
$$GiniCredit(D)=\frac{4}{10}\times\left(1-\left(\frac{3}{4}\right)^2-\left(\frac{1}{4}\right)^2\right)+\frac{6}{10}\times\left(1-\left(\frac{1}{6}\right)^2-\left(\frac{5}{6}\right)^2\right)=0.317$$

ازآنجایی‌که $\text{GiniHouse}(D)=0.160$ کوچک‌ترین مقدار است بنابراین ابتدا بر اساس ویژگی House درخت ایجاد می‌گردد.

$$Gini(House)=Gini(D)-GiniHouse(D)=0.480-0.160=0.320$$

ID	Age	Job	House	Credit	Class
1	Old	False	True	Excellent	Yes
2	Old	False	True	Good	Yes
4	Middle	True	True	Good	Yes
7	Middle	False	True	Excellent	Yes
9	Young	True	True	Fair	Yes

ID	Age	Job	House	Credit	Class
3	Middle	False	False	Fair	No
5	Young	False	False	Fair	No
6	Old	False	False	Fair	No
8	Young	True	False	Good	Yes
10	Middle	False	False	Good	No



شاخهٔ سمت چپ:

ID	Age	Job	Credit	Class
1	Old	False	Excellent	Yes
2	Old	False	Good	Yes
4	Middle	True	Good	Yes
7	Middle	False	Excellent	Yes
9	Young	True	Fair	Yes

$$Gini(D) = 1 - \left(\frac{0}{5}\right)^2 - \left(\frac{5}{5}\right)^2 = 0 \Rightarrow$$ ادامه نمی‌دهیم

با توجه به این‌که $Gini(D) = 0$ است بنابراین شاخهٔ سمت چپ ادامه پیدا نکرده و به برگ خواهیم رسید.

شاخهٔ سمت راست:

ID	Age	Job	Credit	Class
3	Middle	False	Fair	No
5	Young	False	Fair	No
6	Old	False	Fair	No
8	Young	True	Good	Yes
10	Middle	False	Good	No

$$Gini(D) = 1 - \left(\frac{4}{5}\right)^2 - \left(\frac{1}{5}\right)^2 = 0.320 \Rightarrow$$ ادامه می‌دهیم

ID	Age	Job	Credit	Class
3	Middle	False	Fair	No
5	Young	False	Fair	No
6	Old	False	Fair	No
8	Young	True	Good	Yes
10	Middle	False	Good	No

$\{Old\},\{Middle, Young\}$

$$GiniAge(D)=\frac{1}{5}\times\left(1-\left(\frac{1}{1}\right)^2-\left(\frac{0}{1}\right)^2\right)+\frac{4}{5}\times\left(1-\left(\frac{3}{4}\right)^2-\left(\frac{1}{4}\right)^2\right)=0.300$$

ID	Age	Job	Credit	Class
3	Middle	False	Fair	No
5	Young	False	Fair	No
6	Old	False	Fair	No
8	Young	True	Good	Yes
10	Middle	False	Good	No

$\{Middle\},\{Old,\ Young\}$

$$GiniAge(D)=\frac{2}{5}\times\left(1-\left(\frac{2}{2}\right)^2-\left(\frac{0}{2}\right)^2\right)+\frac{3}{5}\times\left(1-\left(\frac{2}{3}\right)^2-\left(\frac{1}{3}\right)^2\right)=\ 0.267$$

ID	Age	Job	Credit	Class
3	Middle	False	Fair	No
5	Young	False	Fair	No
6	Old	False	Fair	No
8	Young	True	Good	Yes
10	Middle	False	Good	No

$\{Young\},\{Middle, Old\}$

$$GiniAge(D)=\frac{2}{5}\times\left(1-\left(\frac{1}{2}\right)^2-\left(\frac{1}{2}\right)^2\right)+\frac{3}{5}\times\left(1-\left(\frac{3}{3}\right)^2-\left(\frac{0}{3}\right)^2\right)=0.200$$

ID	Age	Job	Credit	Class
3	Middle	False	Fair	No
5	Young	False	Fair	No
6	Old	False	Fair	No
8	Young	True	Good	Yes
10	Middle	False	Good	No

$$GiniJob(D)=\frac{4}{5}\times\left(1-\left(\frac{4}{4}\right)^2-\left(\frac{0}{4}\right)^2\right)+\frac{1}{5}\times\left(1-\left(\frac{0}{1}\right)^2-\left(\frac{1}{1}\right)^2\right)=0$$

ID	Age	Job	Credit	Class
3	Middle	False	Fair	No
5	Young	False	Fair	No
6	Old	False	Fair	No
8	Young	True	Good	Yes
10	Middle	False	Good	No

$$GiniCredit(D)=\frac{3}{5}\times\left(1-\left(\frac{3}{3}\right)^2-\left(\frac{0}{3}\right)^2\right)+\frac{2}{5}\times\left(1-\left(\frac{1}{2}\right)^2-\left(\frac{1}{2}\right)^2\right)=0.200$$

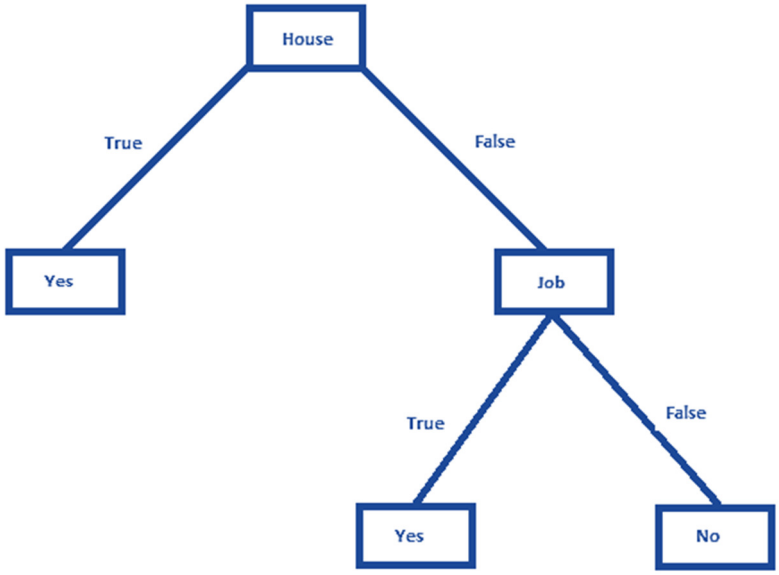
ازآنجایی‌که $\mathrm{GiniJob}(D)=0$ کوچک‌ترین مقدار است بنابراین بر اساس ویژگی Job رشد درخت ادامه می‌یابد.

$$Gini(Job)=Gini(D)-GiniJob(D)=0.320-0=0.320$$

ID	Age	Job	Credit	Class
3	Middle	False	Fair	No
5	Young	False	Fair	No
6	Old	False	Fair	No
10	Middle	False	Good	No

ID	Age	Job	Credit	Class
8	Young	True	Good	Yes

در اینجا با توجه به اینکه به‌واسطهٔ تقسیم بر اساس ویژگی Job دو جدول ایجاد می‌گردد که یکی کاملاً متعلق به کلاس NO و دیگری کاملاً متعلق به کلاس Yes است، نیازی به ادامهٔ محاسبات نیست؛ بنابراین ساختار نهایی درخت تصمیم به شکل زیر خواهد بود.


House
True
False
Yes
Job
True
False
Yes
No