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1. Pertama, hitung Entropy total: Total kasus = 10 Kasus "Ya" = 6 Kasus "Tidak" = 4

$$\text{Entropy}(S) = (-6/10 \times \log_2(6/10)) + (-4/10 \times \log_2(4/10)) = (-0.6 \times \log_2(0.6)) + (-0.4 \times \log_2(0.4)) = 0.971 \text{ bits}$$

2. hitung Entropy dan Gain untuk setiap atribut:

A) TINGGI:

- Tinggi (4 kasus): 3 Ya, 1 Tidak Entropy = $(-3/4 \times \log_2(3/4)) + (-1/4 \times \log_2(1/4)) = 0.811$
- Sedang (3 kasus): 2 Ya, 1 Tidak Entropy = $(-2/3 \times \log_2(2/3)) + (-1/3 \times \log_2(1/3)) = 0.918$
- Rendah (3 kasus): 1 Ya, 2 Tidak Entropy = $(-1/3 \times \log_2(1/3)) + (-2/3 \times \log_2(2/3)) = 0.918$

$$\text{Gain(Tinggi)} = 0.971 - ((4/10 \times 0.811) + (3/10 \times 0.918) + (3/10 \times 0.918)) = 0.971 - 0.877 = 0.094$$

B) PENYIMPANAN:

- SSD (6 kasus): 5 Ya, 1 Tidak Entropy = $(-5/6 \times \log_2(5/6)) + (-1/6 \times \log_2(1/6)) = 0.650$
- HDD (4 kasus): 1 Ya, 3 Tidak Entropy = $(-1/4 \times \log_2(1/4)) + (-3/4 \times \log_2(3/4)) = 0.811$

$$\text{Gain(Penyimpanan)} = 0.971 - ((6/10 \times 0.650) + (4/10 \times 0.811)) = 0.971 - 0.715 = 0.256$$

C) RAM:

- 16GB (3 kasus): 3 Ya, 0 Tidak Entropy = 0
- 8GB (5 kasus): 3 Ya, 2 Tidak Entropy = $(-3/5 \times \log_2(3/5)) + (-2/5 \times \log_2(2/5)) = 0.971$
- 4GB (2 kasus): 0 Ya, 2 Tidak Entropy = 0

$$\text{Gain(RAM)} = 0.971 - ((3/10 \times 0) + (5/10 \times 0.971) + (2/10 \times 0)) = 0.971 - 0.486 = 0.485$$

D) HARGA:

- Mahal (4 kasus): 3 Ya, 1 Tidak Entropy = 0.811
- Sedang (3 kasus): 2 Ya, 1 Tidak Entropy = 0.918
- Murah (3 kasus): 1 Ya, 2 Tidak Entropy = 0.918

$$\text{Gain(Harga)} = 0.971 - ((4/10 \times 0.811) + (3/10 \times 0.918) + (3/10 \times 0.918)) = 0.971 - 0.877 = 0.094$$

E) PROSESOR:

- Core i7 (4 kasus): 3 Ya, 1 Tidak Entropy = 0.811
- Core i5 (3 kasus): 2 Ya, 1 Tidak Entropy = 0.918
- Core i3 (3 kasus): 1 Ya, 2 Tidak Entropy = 0.918

$\text{Gain(Prosesor)} = 0.971 - ((4/10 \times 0.811) + (3/10 \times 0.918) + (3/10 \times 0.918)) = 0.971 - 0.877 = 0.094.$

Jadi karena Gain tertinggi adalah RAM (0.485), sehingga RAM menjadi node akar.

