

# Cpt\_S570\_hw7

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## 1 Assignment 7

### 1.1 Problem 1

In the txt files.

### 1.2 Problem 2

#### 1.2.1 a.

$$P(\text{Weather}=\text{clear}, \text{Costume}=\text{yes}, \text{Party}=\text{yes})=0.084.$$

#### 1.2.2 b.

$$P(\text{Weather}=\text{cloudy}, \text{Party}=\text{no})=0.12+0.14=0.26.$$

#### 1.2.3 c.

$$P((\text{Costume}=\text{yes}) \wedge (\text{Party}=\text{no}))=0.036+0.12+0.09=0.246.$$

#### 1.2.4 d.

$$P((\text{Costume}=\text{yes}) \vee (\text{Party}=\text{no}))=0.084+0.18+0.09+0.036+0.048+0.12+0.14+0.09+0.096=0.884.$$

#### 1.2.5 e.

$$P(\text{Party}=\text{yes} | \text{Weather}=\text{rain}, \text{Costume}=\text{no})=0.024 / (0.024+0.096)=0.2.$$

#### 1.2.6 f.

$$P(\text{Party}=\text{yes} | \text{Costume}=\text{yes})=(0.084+0.18+0.09) / (0.084+0.036+0.18+0.12+0.09+0.09)=0.354 / 0.6=0.59.$$

### 1.3 Problem 3

$$\begin{aligned} & \mathbf{P}(\text{LearnAI}|\text{LikeCoding}=\text{true}) \\ &= \mathbf{P}(\text{LikeCoding}=\text{true}|\text{LearnAI}) * \mathbf{P}(\text{LearnAI}) / \mathbf{P}(\text{LikeCoding}=\text{true}) \\ &= \alpha < \mathbf{P}(\text{LikeCoding}=\text{ture}|\text{LearnAI}=\text{true}) * \mathbf{P}(\text{LearnAI}=\text{true}), \\ & \mathbf{P}(\text{LikeCoding}=\text{ture}|\text{LearnAI}=\text{false}) * \mathbf{P}(\text{LearnAI}=\text{false}) > \\ &= \alpha < 0.8 * 0.5, 0.6 * 0.5 > \\ &= \alpha < 0.4, 0.3 > \\ &= < \frac{4}{7}, \frac{3}{7} > \end{aligned}$$