**Step-by-Step Explanation:**

1. **Gather Data**: First, you need a **corpus of tagged sentences**, where each word in a sentence is annotated with its correct POS tag (e.g., noun, verb, adjective).
2. **Create Tag Transitions**: For each sentence in the corpus, go through the sequence of POS tags and track how tags transition from one to the next. For example, in the sentence "The cat sleeps," the tag sequence might be DET -> NOUN -> VERB.
3. **Count Transitions**: Count how often one tag follows another. For example, how many times does a **NOUN** follow a **DET** in the corpus?
4. **Calculate Transition Probabilities**: To calculate the probability of transitioning from one POS tag to another, use the following formula:

P(Next Tag∣Current Tag)=Count of transitions from Current Tag to Next TagTotal transitions from Current Tag to any tagP(\text{Next Tag} | \text{Current Tag}) = \frac{\text{Count of transitions from Current Tag to Next Tag}}{\text{Total transitions from Current Tag to any tag}}P(Next Tag∣Current Tag)=Total transitions from Current Tag to any tagCount of transitions from Current Tag to Next Tag​

This gives the probability that the next tag will follow the current tag.

**Example Sentence:**

Consider the sentence: **"The dog barks loudly."**

1. The tagged sentence: The/DET dog/NOUN barks/VERB loudly/ADV.
2. POS tag sequence: DET -> NOUN -> VERB -> ADV.
3. Count transitions (based on the corpus):
   * Number of times **NOUN** follows **DET** (e.g., DET -> NOUN) = 100 occurrences.
   * Number of times **VERB** follows **NOUN** (e.g., NOUN -> VERB) = 50 occurrences.
   * Number of times **ADV** follows **VERB** (e.g., VERB -> ADV) = 30 occurrences.
4. Calculate the probabilities:
   * (NOUN∣DET)=100/120​=0.83 (assuming there are 120 transitions from DET).
   * P(VERB∣NOUN)=50/70=0.71
   * P(ADV∣VERB)=30/50=0.60