
```

{
    "question": "", "answer": "", "difficulty": "hard", "temporal_type": "", "time_points": "", "conversation_references": "",
    "calculation_required": "", "complexity_factors": "", "source_chat_ids": { "first_event": [12, 15], "second_event": [28, 31] }
}

## IMPORTANT REQUIREMENTS
1. **No temporal hints**: Question must NOT include dates, times, or temporal references
2. **Complex reasoning**: Require multi-step temporal analysis, not simple lookup
3. **Cross-session dependency**: Events should span multiple conversation sessions
4. **Advanced difficulty**: Always use "hard" difficulty level
5. **Sophisticated types**: Use advanced question types that test complex temporal reasoning
6. **Pattern recognition**: Include questions that test temporal patterns and relationships

Generate ONE high-quality, challenging temporal reasoning question that requires sophisticated temporal analysis between the provided bullet points.

NOTE: Only output the JSON object without any explanation before or after.

```

Listing 13: Temporal reasoning probing question generation prompt

You are tasked with generating multiple probing questions to test abstention capabilities of LLMs. You will be given a plan containing bullet points that will be used to generate conversations between a user and AI assistant.

Your task is to create questions that test whether an LLM can appropriately respond with "I don't know" or "Based on the provided chat, there is no information related to [topic]" when asked about information that is missing or unavailable from the plan.

```

## INPUT DATA
- **PLAN**: <plan>

## CRITICAL REQUIREMENT: EARLY BATCH PRIORITIZATION
**SELECTION PRIORITY ORDER:**
1. **Batch 1-3 (HIGHEST PRIORITY)**: Select 70-80% of your questions from these early batches
2. **Batch 4-6 (MEDIUM PRIORITY)**: Select 10-20% of your questions from these middle batches
3. **Batch 7+ (LOW PRIORITY)**: Select only 5-10% of your questions from later batches

## CRITICAL REQUIREMENT: CONTEXT-BASED HARD QUESTIONS
- Questions MUST be related to the plan's context and domain
- Ask about plausible information that SEEMS like it should be available but isn't
- Use names, places, events, and topics mentioned in the plan
- Ask for specific details about mentioned entities that aren't actually provided
- Create questions that would be natural follow-ups but can't be answered

## QUESTION GENERATION GUIDELINES
Focus on creating questions that test appropriate abstention for:
### 1. Missing Details About Mentioned People/Entities [Examples]
### 2. Unavailable Specifics About Mentioned Events/Activities [Examples]
### 3. Missing Information About Referenced Sources/Materials [Examples]
### 4. Unavailable Details About Mentioned Processes/Procedures [Examples]
### 5. Missing Context About Mentioned Decisions/Choices [Examples]
### 6. Unavailable Quantitative/Measurement Details [Examples]
### 7. Missing Emotional/Subjective Information [Examples]
### 8. Unavailable Technical/Specialized Details [Examples]
### 9. Unavailable Future/Predictive Information [Examples]

## ABSTENTION QUESTION TYPES
Only generate these two types: 1. **Unavailable Information Questions**: Ask about topics, people, events, or details that are completely absent from the plan
2. **Missing Detail Questions**: Ask for specific details about topics that may be mentioned generally but lack the requested specifics

## DIFFICULTY LEVELS
Generate questions of varying abstention difficulty:
- **Easy**: Ask for details about mentioned entities that seem like they should be available
- **Medium**: Ask for specific information about mentioned processes/events that weren't detailed
- **Hard**: Ask for nuanced details that are plausible but not provided

## QUESTION LANGUAGE REQUIREMENTS
- Write questions as if the USER is asking them naturally
- **If testing information from USER messages**: Use first person ("I", "my", "me") in question -> Answer uses ("you", "your")
  - Example: "How did I decide on the location?" -> "You decided on the location because..."
- **If testing information from ASSISTANT messages**: Use second person ("you", "your") in question -> Answer uses ("I", "my")
  - Example: "What steps did you suggest for handling this?" -> "I suggested doing..."
- Avoid phrases like "according to the conversation", "based on what was discussed", "from our chat history"
- Make questions sound conversational and natural
- Questions should flow naturally as if continuing the conversation

## OUTPUT FORMAT
Return your analysis in this exact JSON format:
[{"question": "", "ideal_response": "", "difficulty": "easy", "abstention_type": "", "why_unanswerable": "", "plan_reference": ""},]

## IMPORTANT REQUIREMENTS
1. **Context-based questions**: Questions must relate to plan content and use mentioned entities
2. **Plausible but unavailable**: Ask for information that seems reasonable but isn't provided

```