

Day-3 Task Report – AI Question Generation Module

Name: Arya

Task: Test topic → question generation pipeline (basic version)

Status: Completed

Work Summary

- Tested the end-to-end pipeline from **topic extraction** → **LLM question generation** using transcript chunks.
 - Used **Gemini 3 Pro** to generate MCQs from identified topic chunks.
 - Validated JSON output structure and explanation quality for each generated question.
 - Captured screenshots for pipeline verification.
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Updated Prompt Used

1. Produce 4 MCQs from the transcript chunk
 2. Include 1 Easy, 2 Medium, 1 Hard question
 3. Add 4 options, correct answer, and a short explanation
 4. Avoid repeating the same words from the transcript
 5. Output strictly in clean JSON format only
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Transcript Chunk Used

(from transcript provided by Mahesh)

An array contains similar types of elements. For example, 4, 2, 90, and 1 are integer elements.

If floating values are required, a separate array must be created where all elements are floats.

Arrays store their values in contiguous memory locations and use zero-based indexing.

This means the first element is stored at index 0, and the fourth element is stored at index 3.

Generated Output (JSON)

```
[  
 {  
   "difficulty": "Easy",  
   "question": "Which statement best describes the fundamental rule regarding the data types stored within a single array structure?",  
   "options": [  
     "The array can hold a mix of text, integers, and decimals simultaneously.",  
     "The array automatically converts all inputs into text strings.",  
     "All items within the array must share a uniform data category.",  
     "The array organizes elements primarily by their value size rather than type."  
   ],  
   "correct_answer": "All items within the array must share a uniform data category.",  
   "explanation": "The transcript states that an array contains \"similar types of elements,\" meaning integers are stored with integers and floats with floats."  
 },  
 {  
   "difficulty": "Medium",  
   "question": "From a system memory perspective, how are the individual components of an array organized relative to one another?",  
   "options": [  
     "They are scattered across available memory slots to optimize space.",  
     "They are linked via pointers while residing in random physical locations.",  
     "They occupy adjacent blocks of memory without gaps.",  
     "They are stored in reverse order from the end of the memory block to the start."  
   ],  
   "correct_answer": "They occupy adjacent blocks of memory without gaps.",  
   "explanation": "The text explains that arrays store elements in \"contiguous memory locations,\" implying they sit next to each other sequentially in hardware."  
 },
```

```
{  
    "difficulty": "Medium",  
    "question": "If a developer needs to retrieve the fifth entry in a dataset organized with standard zero-based indexing, which position reference should be used?",  
    "options": [  
        "Index 3",  
        "Index 4",  
        "Index 5",  
        "Index 6"  
    ],  
    "correct_answer": "Index 4",  
    "explanation": "Because arrays use zero-based indexing (where the first element is 0), the position reference is always the element count minus one ( $5 - 1 = 4$ )."  
},  
{  
    "difficulty": "Hard",  
    "question": "Based on the array characteristics described, what structural approach is required if a program needs to manage both whole numbers and decimal numbers?",  
    "options": [  
        "Merge both types into a single large array with expanded memory allocation.",  
        "Use a specific index offset to separate the whole numbers from the decimals.",  
        "Instantiate distinct data structures for each specific category of data.",  
        "Store the decimals in the memory gaps left between the whole numbers."  
    ],  
    "correct_answer": "Instantiate distinct data structures for each specific category of data.",  
    "explanation": "Since arrays require similar element types, the transcript notes that to store floating values alongside integers, one \"must create a separate array.\""  
}  
]
```

Day-3 Conclusion

Basic topic→question pipeline tested successfully.

Pipeline produces concept-based MCQs with difficulty tags and clean JSON output.

Submitted by

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