

Measuring Curriculum Rigor

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Flatiron School, Phase 5 Project

Background

- College Board offers a thorough framework of skills and knowledge for AP subject areas.
- For Example: AP Computer Science A – **Skills:**
 - **1. Program Design and Algorithm Development**
 - **2. Code Logic**
 - **3. Code Implementation**
 - **4. Code Testing**
 - **5. Documentation**

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- College Board offers a thorough framework of skills and knowledge for AP subject areas.
- For Example: AP Computer Science A – **Skills:**
 - **2 Code Logic:**
 - **2.A: Apply the meaning of specific operators**
 - **2.B: Determine the result or output based on statement execution order in a code segment without method calls.**

2.A: Apply the meaning of specific operators

Consider the following code segment. Assume num is a properly declared and initialized int variable.

```
if (num > 0) {  
    if (num % 2 == 0) {  
        System.out.println("A");  
    }  
    else {  
        System.out.println("B");  
    }  
}
```

Which of the following best describes the result of executing the code segment?

2.B: Determine the result in a code segment without method calls

Consider the following code segment.

```
int[][] points = {{11, 12, 13, 14, 15},
                  {21, 22, 23, 24, 25},
                  {31, 32, 33, 34, 35},
                  {41, 42, 43, 44, 45}};

for (int row = 0; row < points.length; row++) {
    for ( int col = points[0].length - 1; col >= row; col--) {
        System.out.print(points[row][col] + " ");
    }
    System.out.println();
}
```

What is printed when this code segment is executed?

Goal

- Given an assessment question, classify it by skill and knowledge.
- Compare TF-IDF + Logistic Regression results with prompts sent to ChatGPT.

Results

Two categorization methods:

Tf-IDF + Logistic Regression Classifier: 100% accuracy and recall.

ChatGPT Classifier: 100% accuracy and recall.

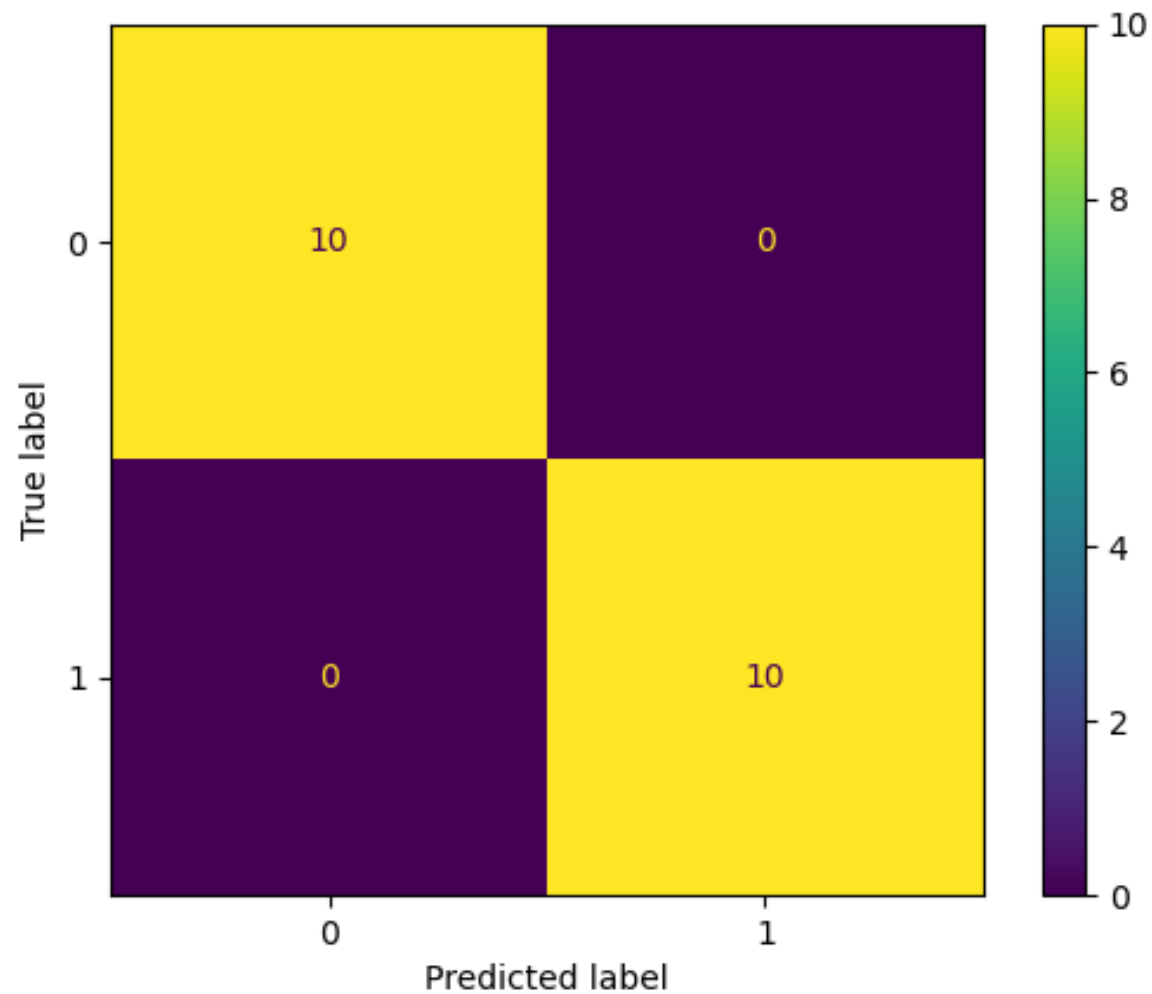
TF-IDF + Logistic Approach

- Vectorize questions and train Logistic Regressor to classify by skill.
- Most significant words:

TF-IDF + Logistic Results

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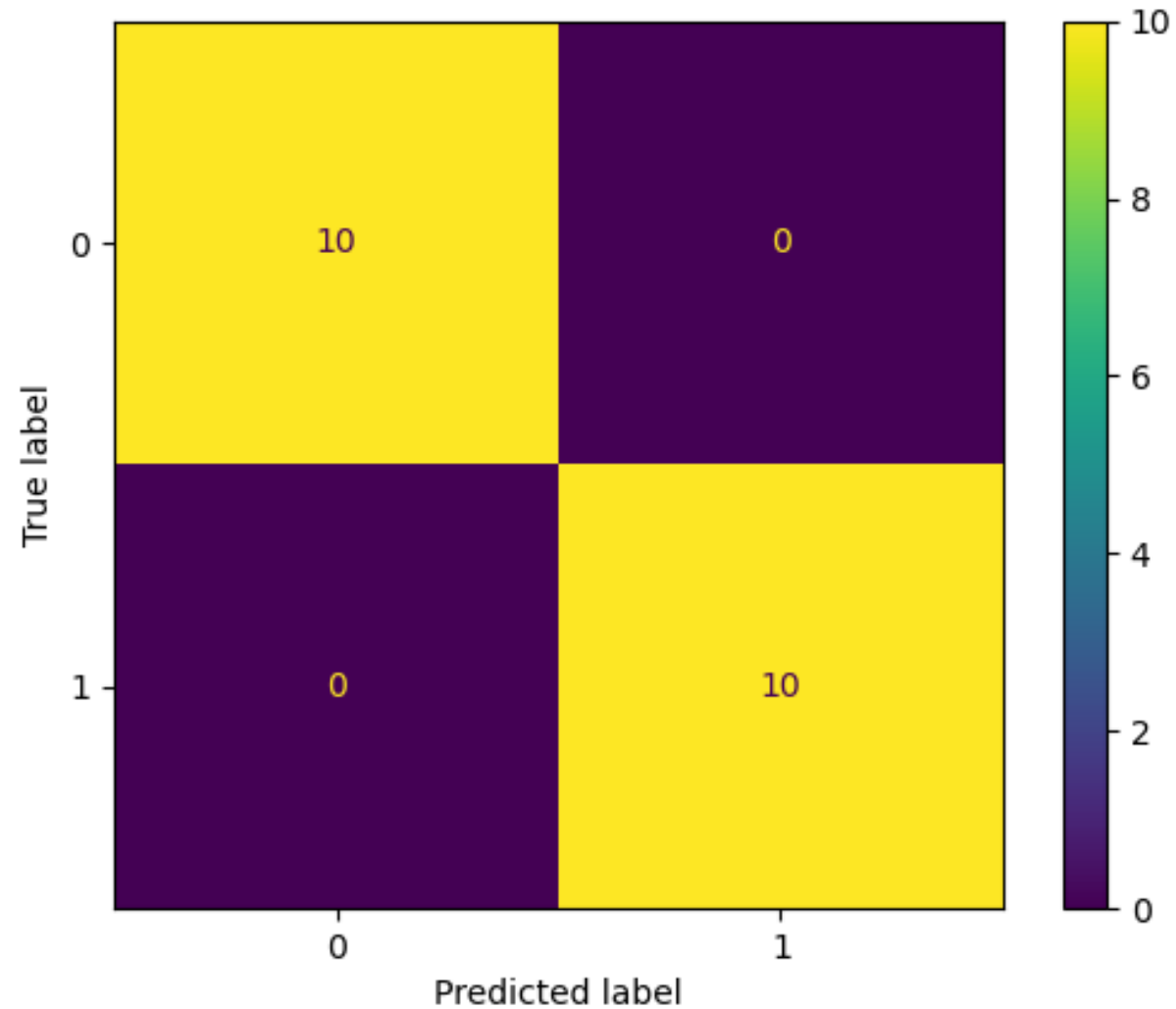
TF-IDF + Logistic Results



ChatGPT Approach

- API call + prompt:
- "Given these definitions for skills ... and these examples, classify the skill assessed"

ChatGPT Results



Results

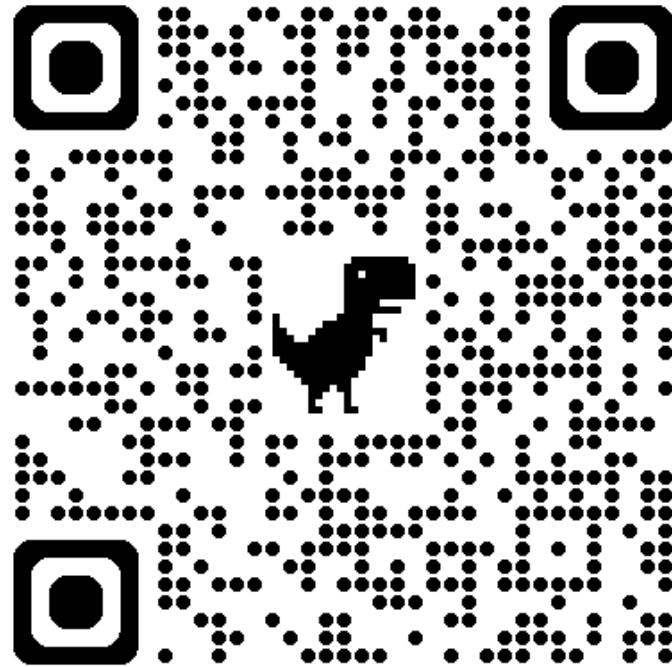
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Questions

Thank You!



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