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1. Requirements

1. I want the application to be able to translate a string to a string. More formally, I want :
 - The app to be able to translate a text from 中文 to 英文, such that
 - it gives the full meaning of translation in 英文
 - for each 汉字 in the input, it gives the semantic meaning of each 汉字
 - The app to be able to translate a text from 英文 to 中文, such that
 - it gives the full meaning of translation in 中文
 - for each 汉字 in the output, it gives the semantic meaning of each 汉字
 - The app to be able to translate from a string with mixed language to 中文, such that
 - it gives the full meaning translation in 中文
 - for each 汉字 in the output, it gives the semantic meaning of each 汉字
2. I want the library to be created as SDK so that I could create it in different platform (such as android, web, etc)

2. Example

1. 中文

```
TranslationResult(  
  input      = "我喜欢学习中文",  
  fullMeaning = "I like studying Chinese",  
  breakdown  = [  
    TokenBreakdown("我", CHINESE, "wǒ", "I / me"),  
    TokenBreakdown("喜欢", CHINESE, "xǐ huān", "to like / to enjoy"),  
    TokenBreakdown("学习", CHINESE, "xué xí", "to study / to learn"),  
    TokenBreakdown("中文", CHINESE, "zhōng wén", "Chinese language")  
  ]  
)
```

2. 英文

```
TranslationResult(  
  input      = "I like studying Chinese",  
  fullMeaning = "我喜欢学习中文",  
  breakdown  = [  
    TokenBreakdown("我", CHINESE, "wǒ", "I / me"),  
    TokenBreakdown("喜欢", CHINESE, "xǐ huān", "to like / to enjoy"),  
    TokenBreakdown("学习", CHINESE, "xué xí", "to study / to learn"),  
    TokenBreakdown("中文", CHINESE, "zhōng wén", "Chinese language")  
  ]  
)
```

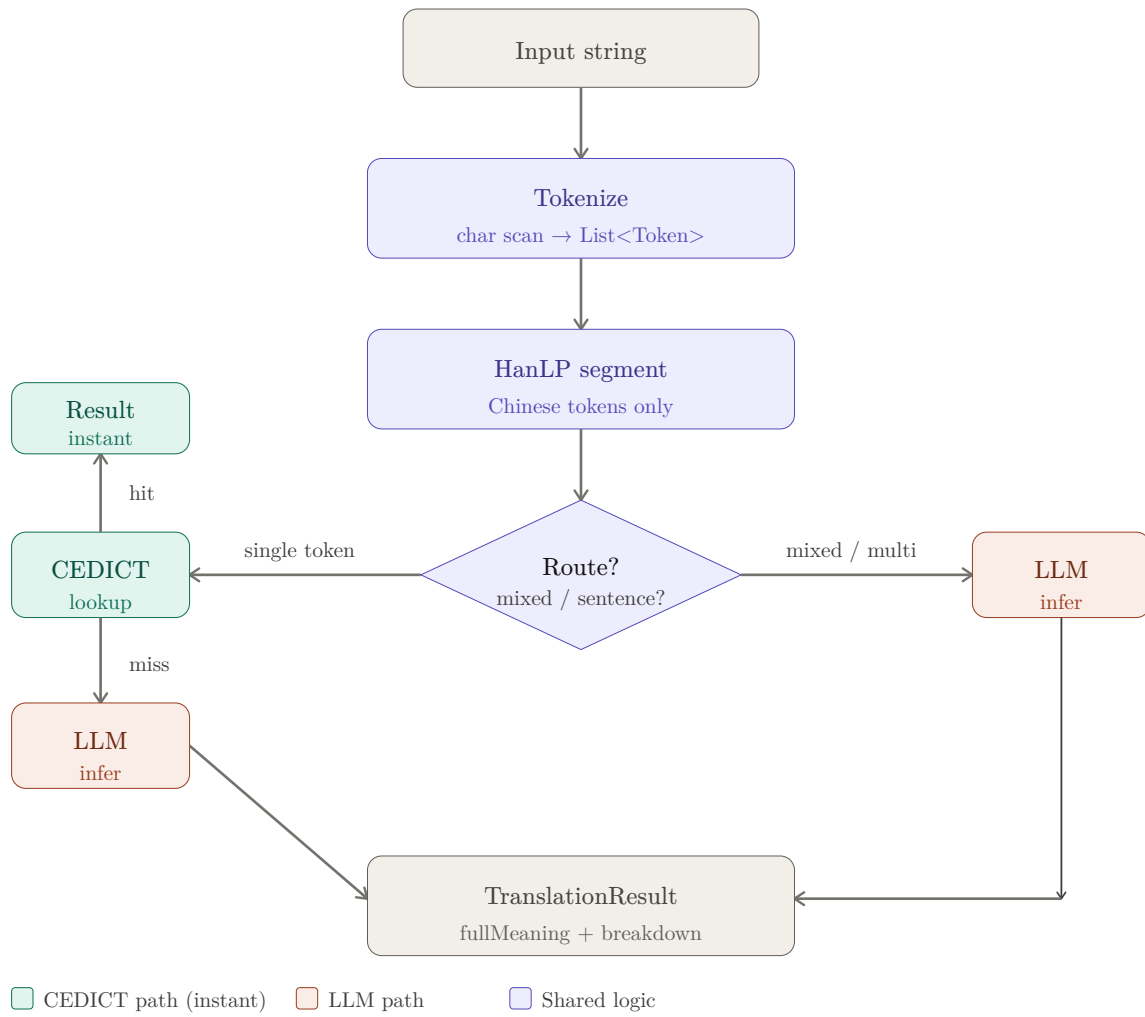
3. Mixed

```
TranslationResult(  
  input      = "我like学习中文",  
  fullMeaning = "我喜欢学习中文",  
  breakdown  = [  
    TokenBreakdown("我", CHINESE, "wǒ", "I / me"),  
    TokenBreakdown("喜欢", CHINESE, "xǐ huān", "to like / to enjoy"),  
    TokenBreakdown("学习", CHINESE, "xué xí", "to study / to learn"),  
    TokenBreakdown("中文", CHINESE, "zhōng wén", "Chinese language")  
  ]  
)
```

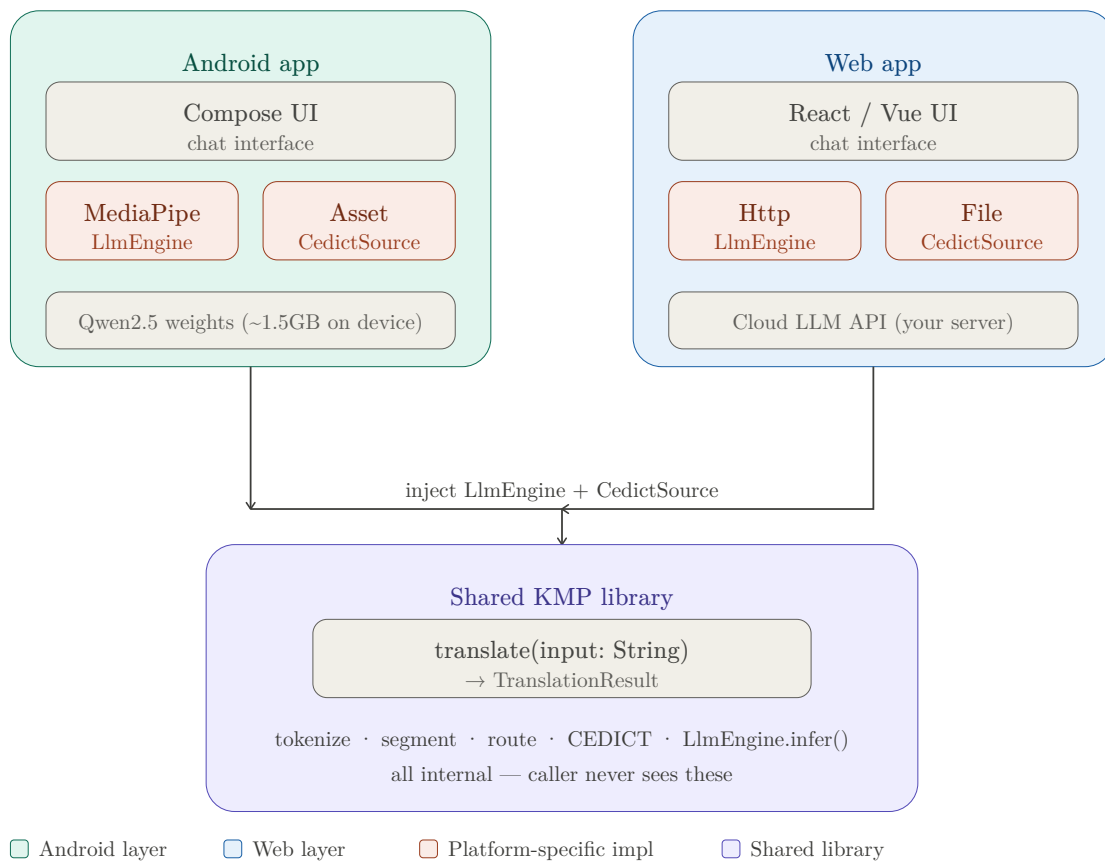
3. Architecture

Previously, I just wanted to create only android app. But after thinking more about it, I think I should create it in several platform. Because of that, the main engine of the app should be decoupled from the app Hence, I will explain the diagram of the main translation engine before diving it into each platform.

3.1. Translation flow



3.2. Flow Diagram



3.3. Android