MEP 21 -- Support debug and run on Mac

Current state: Under Discussion

ISSUE: https://github.com/milvus-io/milvus/issues/12777

PRs:

Keywords: debug, run, Mac

Released:

Summary(required)

Separating Knowhere from Milvus project make Milvus easy to run on Mac or other laptops, due to decoupling knowhere that is the engine module make code structure more clear.

Motivation(required)

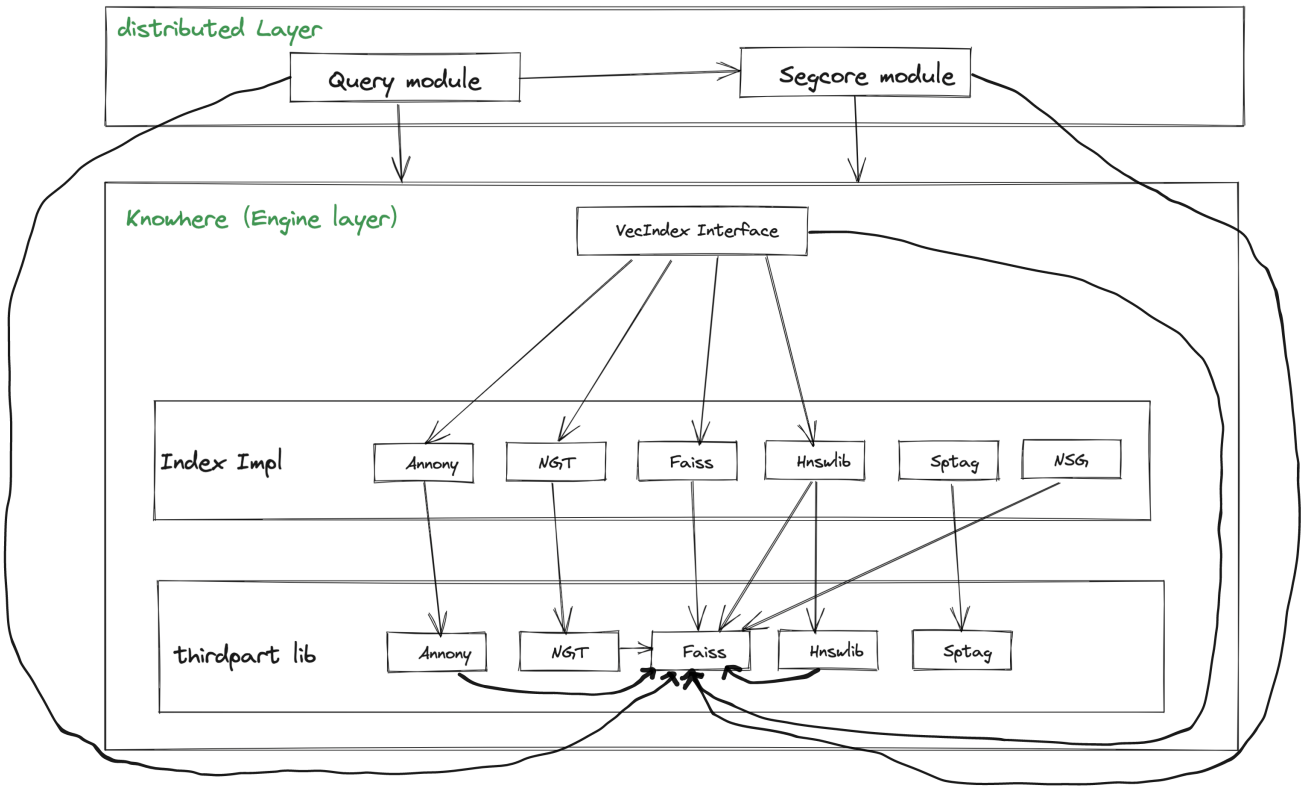
Compiling and running Milvus on Mac is a common requirement, which is helpful for work on the Mac laptop.

Public Interfaces(optional)

TODO

Design Details(required)

1. Current dependence



- Segcore depends on the query module, both of them depend on faiss lib.
- Except for NSG and SPTAG, other index implementations are based on VecIndex Interface.
- HNSWLib and NSG were implemented with fass lib.
- The thirdpart libs include HNSWLibNGT and Annoy that depending on faiss.

2. Decoupling

- The distributed layer doesn't directly depend on faiss and should access the unified interface of knowhere.
- Each index implementation should be independent, there is an important thing that we keep maintenance thirdpart libs following the new source version.
- Move Knowhere to a new project.
- We'd better decouple libfiu from the key code path, which should only use within the test code.

2. Support compile on MAC

- Distributed layer
  - Optimize compile phase make Query and segcore module depends on knowhere shared library.
  - Reconstruct *BinarySearchBruteForce* and *FloatSearchBruteForce* functions within the query module by knowhere supported brute force search index.
  - Support an alternative way to use libfiu which doesn't compile on Mac, or provide an option to use libfiu when compiling on Mac.
- Engine Layer(knowhere)
  - Support a brute force search which is a kind of vector index and compiled on MAC & Ubuntu.
  - Upgrade faiss to the latest version, because the current version can not be compiled on Mac.

Test Plan(required)

Rejected Alternatives(optional)

References(optional)