

- Fragmentation is a description of an application that cannot be written once and can be run anywhere.
- The causes of this phenomenon include diversity and differences at some points of hardware; diversity of software used (different platforms and different performance standards); The features are rewritten, the mod creates different variants that are optimized for each different user object; user's interests and knowledge and acquaintances; Lastly, the diversity of the deployment environment is influenced by surrounding causes such as general regional specifications or standard workspace or area requirements.
- The rules that need to be implemented when deploying and deploying mobile software, such as in IBM consolidation processes, are: business modeling => requirement management => analysis and design => statement Development => project management => configuration and change management => environment. These activities consume more time and resources and can cause bugs and vulnerabilities to exploit. Those are the main reasons why we must pay attention in the process of developing mobile software.
- Currently, mobile applications often have multiple versions to suit different devices due to the essential variety of devices (size, screen resolution, ...) and diversity (API implementation error). Therefore, good research and standardization steps should be taken to minimize accidental diversity to minimize resource loss in the most efficient way and to minimize the number of vulnerable vulnerabilities. or exploited by a third party.
- The fragmented approach:
  - o MANUAL-MULTI: In simple words, you can imagine that for each OC, we design a separate version. But this is a method that takes a lot of resources and time but has a lot of duplicate work.
  - o DERIVE-MULTI: this is a method of building a version for each OC based on available code base and is deployed in 3 ways: selective packaging, meta programming and automatic generation. This is the more optimal method of limiting time and resources on unnecessary repetitive things.
  - o SINGLE-ADAPT: this is a method to build an optimal version for all OCs and it is divided into 2 parts: FITS-ALL and ALL-IN-ONE.
- Other aspects of fragmentation include fragmentation in transmission applications, fragmentation in product lines, fragmentation in sms and mobile web applications, java and non-java applications.
- In the future, the issues related to fragmentation will also increase, such as the ability of devices to be enhanced, mobile applications that require the ability to run on desktop computers, and the number of mobile device models. strong mourning, and standardization during development.
  - ⇒ Fragmentation is an important issue in the process of developing a mobile application, depending on the capabilities and scale of the project that we can apply different approaches and remedies but in general this is the problem that any application faces. As for the above methods, I see that each one has its own advantages and disadvantages, so depending on the situation and scale of the project, we can apply flexibly to get the best results. least resource and time consuming.