Code Optimization Course (by PHP)

In favor of IUG IT Club

Trained by Mohammed A. El-Agha

Course Name

Beginner Code Optimization Course for PHP

Course Description

The Code Optimization Course aims to teach students best practices in programming to achieve good time efficiency, using general and specific programming styles, patterns, approaches, rules and tips. The practical side of course is by PHP programming language.

Course Hours

20 Hours

Course Topics

1. PHP Review
2. Execution Time Evaluation
3. Standard Methods of Code Optimization
4. Low Cost Object-Oriented
5. Low Cost Expressions
6. Patterns for Better Performance
7. External Calls Reduction
8. Caching
9. Regular Expressions
10. Some Database and SQL Performance Tricks

Course Resources

(Code) https://github.com/MohammedElagha/IUG-Code-Optimization-Course

(Videos) https://www.youtube.com/playlist?list=PLE5Mq0Nw_FloeXDJFEhBFOB2Up5NiS6pS

Course Detailed Matrix

Topic	Sub-Topics
PHP Review	General Review
	Strings
	Arrays
Introduction to Code Optimization	What Code Optimization
	Time efficiency vs. Space efficiency
	Performance vs. Reusability + Simplicity + Flexibility
	Code Optimization vs. Coding Standards
Execution Time Evaluation	
Standard Methods of Code Optimization	Constant Folding
	Constant Propagation
	Common Sub-Expression Elimination
	Code Movement
	Dead Code Elimination
	Strength Reduction
Low Cost Object-Oriented	Optimal OO basic shape
	Relationship Optimization
	Move Method
	Pull-up Method
	Extract Class
	Inline Class
Low Cost Expressions	Custom code vs. native functions
	Single quotes vs. double quotes
	Concatenation
	Comparison operators
	Relative path vs. Absolute path
	Local variables vs. global variables
	Concreate vs. Static
	Indexing
	Logic reduction by numeric
	is_null vs isset vs count
	looped operations
	Unset variables
	Less-complexity loop
	varargs
Patterns for Better Performance	Pass by reference
	Singleton Pattern
	Chain Pattern
	Less requests for functionality
	Data Structures
	Functional Programming
	Word Encoding (Word to Numeric)
	Aggregation Layer
External Calls Reduction	Latest PHP version
	External front-end libraries
	Official libraries
	JavaScript & jQuery optimal use
	Multi-Lingual front-end
Caching	
Regular Expressions	

Some Database and SQL Performance Tricks	Pagination
	Counting in SQL; not PHP
	count(*) vs count(id)
	Required fields
	Sorting
	1 query as possible
	mysql_multi_query
	1 more storage field better than long-time query
	Pricing System
	Multi-Lingual DB Schema
Some tips for better performance in PHP	