Financial IT Examination Syllabus（2019）

Java (Entry-Level)

考试比例：Domain 24%，CoreJava 50%，SQL 16%，其他10%

1. Examination Objective

The examination will test the candidates' ability to be entry-level financial IT engineer, including the conceptual knowledge and practical skills of Java technology, the conceptual knowledge and understanding of domain business, the ability to cooperate and coordinate during work by applying the professional skills and English skills.

2. Examination Scope

✧ Test Subject 1: Java Technology

1) Core Java 占比50%

◆ Differentiate between various OOPS concepts, such as abstraction, encapsulation, inheritance, polymorphism, overloading and overriding

◆ Apply the knowledge to compile java code, analyze common compilation errors and run java program

◆ Explain how to declare and access the variables in Java for the primitive data types (byte, short, int, long, float, double, char, boolean), and the type cast

◆ Understand various operators (Arithmetic Operators, Relational Operators, Bitwise Operators, Logical Operators, Assignment Operators) and expressions of Java and their precedence rules and apply these knowledge in programming

◆ Explain the usage of program control structures, including if…else statement, switch statement, while loop, do…while loop, for loop, break statement, continue statement.

◆ Understand usage of single and multi-dimensional arrays, including defining array variables, creating arrays, processing arrays, and passing or returning arrays to/from method.

◆ Understand the concept of object and class. Work with Java class libraries to instantiate objects from Java classes. Write Java programs that reuse objects and their attributes.

◆ Explain various collection and interfaces classes in java and the class hierarchy, including:

- Vector,
- Hashtable,
- Enumeration,
- Date,
- String,
- StringBuffer,
- StringBuilder,
- StringTokenizer,
- Calendar,
- Comparator, Collection.

◆ Understand the usage of file operations and various classes, methods involved in file operations, including:

- InputStream,
- OutputStream,
- FileInputStream,
- FileOutputStream,
- RandomAccessFile,
- ObjectInputStream,
- ObjectOutputStream

◆ Understand the basic knowledge of thread, including the concept of thread, the lifecycle of thread, the priorities of threads, various thread methods, and creating threads in the program.

◆ Apply the techniques of exception handling.

◆ Apply debugging knowledge in client-side, server-side, multithread debugging. Understand the usage of Log4j and Junit.

◆ Apply techniques of configuration and deployment for weblogic/tomcat

◆ Describe the method, driver available in JDBC API

◆ Apply key pattern-oriented software architecture techniques to develop reusable object-oriented software infrastructure, including:

- Singleton Pattern,
- Factory Pattern,
- Abstract Factory
- Prototype Pattern,
- Builder Pattern,
- Proxy Pattern.

2) Web Technology

◆HTML

Understand the HTML document structure and apply the HTML tags to format the content

- Explain the knowledge of HTML tables to arrange data like text, images, links, other tables, etc. into rows and columns of cells, including Table Heading, Table Rows, Table Cells, Colspan and Rowspan Attributes, Cellpadding and Cellspacing Attributes, Table Height and Width, Tables Background Color.

- Explain the knowledge of HTML form and different types of form controls that you can use to collect data using HTML form: Single-line text input controls, Password input controls, Multi-line text input controls, Checkboxes Controls, Radio Box Controls, Select Box Controls, File Select boxes, Hidden Controls, Clickable Buttons, Submit and Reset Button

- Understand the knowledge of HTML frames to divide your browser window into multiple sections where each section can load a separate HTML document.

◆Javascript

- Describe the different ways to place JavaScript in an HTML file in different ways

- Explain the various data types of Javascript and understand the knowledge to use Javascript variables.

- Explain the knowledge of various operators, including:
  - ◆ Arithmetic Operators,
  - ◆ Comparison Operators,
  - ◆ Logical Operators,

- Bitwise Operators,
- Assignment Operators

■ Explain the different statements to control program logic,including:

- if…else statement,
- switch statement,
- while loop,
- for loop,
- break statement,
- continue statement.

■ Understand the knowledge of functions in Javascript, including :

- function definition,
- calling a function,
- function parameters,
- the return statement.

■ Describe the knowledge of Javascript object and the basic built-in objects, including Math, Date, String.

■ Explain various HTML Events supported by Javascript and how to use them to manipulate a page.

■ Describe the ways to create and manipulate a DOM to access and modify document content.

◆ XML/Ajax/DOM

■ Understand the syntax, elements, attributes of XML.

■ Explain the use of parser for XML, including DOM parser, SAX paser.

■ Explain the use of XSLT, DTD and Schema

■ Apply integrated use of AJAX with Javascript, DOM, CSS, XMLHttpRequest.

■ Explain the steps in an AJAX Operation.

■ Explain the knowledge of XMLHttpRequest object and get familiar with the methods and properties of XMLHttpRequest object.

- Understand the basic attributes of DOM, including:
  - childNodes,
  - firstChild,
  - lastChild,
  - nodeValue,
  - parentNode.

- Understand the basic attributes of DOM, including:
  - createElement,
  - createTextNode,
  - getElementById,
  - getElementsByTagName,
  - hasChildNodes, getAttribute

◆ Jquery

- Learn to configure Jquery environment
- Learn to user different selectors to manipulate DOM objects
- Learn how does JQuery bound event
- Learn the userful tool functions in JQuery
- Learn to use AJAX in JQuery

3) J2EE

◆Struts2

- Understand the feature and advantage of Struts2

- Describe the steps of Struts2 environment setup.

- Understand the architectural and request life cycle of the Struts 2 MVC pattern.

- Understand the knowledge of Actions of the Struts2 framework and provides the processing logic necessary to service the request from the user.

- Understand the various ways of Struts to convert data types

- Understand Struts's validation framework which assists the application to run the rules to perform validation before the action method is executed.

■ Understand the knowledge of Interceptors and how to use it for crosscutting functionality to be implemented separately from the action as well as the framework.

■ Explain how to use various tags of Struts2, including:
  ◆ Control Tags (if, elseif, else, iterator, append, merge, generator, subset, sort),
  ◆ Data Tags (bean, param, date, debug, include, set, url, push),
  ◆ From Tags,
  ◆ Ajax Tags

■ Explain the steps to handle uncaught exception and redirect users to a dedicated error page.

◆Hibernate

■ Describe the features and architecture of Hibernate.

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■ Understand the environment setup and configuration of Hibernate.

■ Understand the main functions of the Session to offer create, read and delete operations for instances of mapped entity classes.

■ Explain the use of HQL to perform action on database.

■ Understand the mapping of all the basic, date and time, large object, and various other built-in mapping types.

■ Understand the O/R mapping of Hibernate, including :
  ◆ the mapping of collections,
  ◆ the mapping of associations between entity classes,
  ◆ Component Mappings.

◆Spring

■ Describe the features and architecture of Spring.

■ Understand the environment setup and configuration of

Spring.

■ Understand how the container gets its instructions on what objects to instantiate, configure, and assemble by reading configuration metadata provided.

■ Understand the knowledge of bean, including:
- ◆ the definition,
- ◆ the scope,
- ◆ the life cycle,
- ◆ the post process,
- ◆ auto-wiring

■ Apply integrated use of Spring with Struts or Hibernate. Understand the SSH framework (struts+spring+hibernate)

◆ Spring MVC

■ Describe the features and architecture of Spring MVC.

■ Understand the environment setup and configuration of Spring MVC.

■ Learn how Spring MVC implements delivery parameters and returns the results page by implementing the Controller interface.

◆ Database SQL 占比16%

■ Learn to install Database.

■ Learn to write a simple additions and deletions check sql statement, take alias.

■ Understand the operands in the sql statement and use them in the actual query.

■ Learn to use where to conduct single-query and multi-conditional query.

■ Understanding the sql statement LIKE , AND, OR , IN , IS NULL , IS NOT NULL, ORDER BY , DISTINCT and other keywords.

■ Learn to learn how to use the various functions in the

database.

■ Learning to use the database in the multi-table query, learn left outside the connection, the right outside the connection, since the connection, the external connection and other multi-table query.

■ Learn to use subquery.

■ Learn the management of the database.

■ TOP-N query.

■ Understand the constraints in the database.

◆ Linux operation command

■ Understand the linux environment settings and configuration.

■ Understanding of linux commonly used instructions, system management commands, packaging compression related commands, shutdown / restart the machine, Linux pipeline, Linux package management, vim use, user and user group management,file permissions management.

✧ Test Subject 2: Business Domain Knowledge 占比24%

1) Core Banking

i. Enumerate the roles and functions of money.

ii. Describe how money supply affects other economic indicators.

iii. Understand the need for financial intermediaries and various monetary institutions.

iv. Describe the definition of bank and differentiate the types of banks.

v. Identify assets and liabilities of a bank and describe how are they involved in a bank's general business flow

vi. Distinguish between personal and commercial accounts and the way they are handled by a bank

vii. Identify the various types of account products and the processes involved in the its function

viii. Explain the steps in the lending process

ix. Get an overall picture of the credit card business, including:
- application
- authorization
- transaction flow
- collection
- merchant management
- dispute

and etc.

x. Understand the basic concepts of accounting terminology, including:
- accounting entries
- accounting equation
- credit
- debit
- general ledger
- trail balance

and etc.

xi. Understand the financial statements and their relationships, including:
- balance sheet
- income statement
- statement of cash flow

xii. Understand the basic concepts of remittance, identify the different types of remittance, and the process of inward and outward remittance

xiii. Understand the basic knowledge of risks and compliance in banking

2) Investment Banking

i. Understand the basic terminology and types of financial market

ii. Identify the common capital market instruments:
- Fixed Income Securities
- Variable Income Securities

iii. Describe the functions and participants of money market.

iv. Identify the Money market interest rates and benchmarks, including:
- official (central bank) rates
- market average rates such as:
  - LIBOR
  - overnight indices

v. Identify the Common Money Market Instruments:
- Treasury Bills
- Notes and Bonds
- Federal Agency Securities
- Bankers' Acceptances
- Commercial Paper
- Negotiable Certificate of Deposit
- Federal Funds
- Repurchase Agreements

vi. Understand the definition and players of Derivatives

vii. Identify the types of Derivatives:
- forwards, futures, swaps, and options
- Equity derivatives, Foreign exchange derivatives, Interest rate derivatives, Commodity derivatives, Credit derivatives
- Exchanged-related, Over-the-counter (OTC)
- Pay-off profile Long call, Short call, Long put, Short put

viii. Understand the instruments and process of foreign exchange, the mechanics of spot and forward trading, the calculation of forward prices and cross-rates.

ix. Understand the key factors that influence exchange rates

✧ Test Subject 3: Professional Skills

- Understand instructions and written documentation clearly and accurately
- Structure thoughts and express them clearly so as to be understood by the recipients
- Express complex ideas and issues effectively through written communication

- Write clear and unambiguous technical documentation that includes user guides, reports, specifications and etc.
- Offer views, share ideas and also build on others ideas and offers constructive feedback

✧ Test Subject 4: English Skills

- Communicate effectively through written English.
- Master adequate technical-related IT vocabulary
- Be able to read and write required technical documents
- Master adequate financial and banking domain vocabulary, such as credit, debit, deposit, time deposit, clearing, settlement, loan, foreign exchange, derivative, and etc.
- Understand banking domain written documentation clearly, accurately, and effectively