

QUIZMANAGER TECHNICAL REPORT

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Technical Report - Java &
UML

MSc - Fall Intake

Java

Java is a general-purpose computer programming language that is concurrent, class-based, objected-oriented and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to bytecode that can run on any Java Virtual Machine (JVM) regardless of computer architecture.

Tools Used: Eclipse IDE & XML

Eclipse is an integrated development environment (IDE) used in computer programming, and is the most widely used Java IDE.

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

Program Components

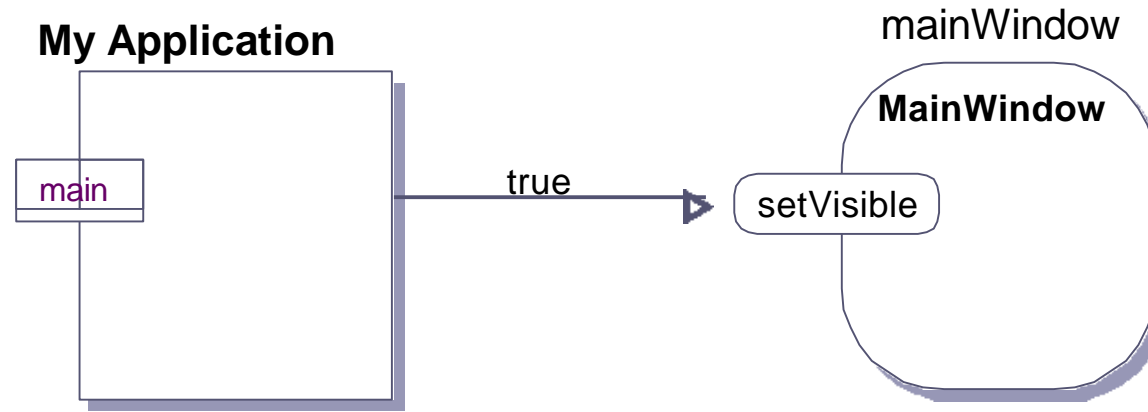
A Java program is composed of:

comments,

import statements, and

class declarations.

Object Diagram



Object Creation

Object Name

Name of the object we are creating here.

Class Name

An instance of this class is created.

Argument

No arguments are used here.

mainWindow = new MainWindow ();

Three types of comments

```
/*  
    This is a comment with  
    three lines of  
    text.  
*/
```

Multiline Comment

```
// This is a comment  
// This is another comment  
// This is a third comment
```

Single line Comments

```
/**  
 * This class provides basic clock functions. In addition  
 * to reading the current time and today's date, you can  
 * use this class for stopwatch functions.  
 */
```

javadoc Comments

Built-In Types Of Variables

Type	Description
byte	8 bit signed integer
short	16 bit signed integer
int	32 bit signed integer
long	64 bit signed integer
float	32 bit signed real number
double	64 bit signed real number
char	16 bit Unicode character (ASCII and beyond)
boolean	1 bit true or false value
String	A sequence of characters between double quotes ("")

Keywords in Java

abstract	boolean	break	byte	case	catch	char
class	const	continue	default	do	double	else
extends	final	finally	float	for	goto	if
implements	import	instanceof	int	interface	long	native
new	package	private	protected	public	return	short
static	super	switch	synchronized	this	throw	throws
transient	try	void	volatile	while		

Project - Introduction

This project is proposed to students in order to evaluate their skills for the fundamental period of Java Programming and UML.

The QuizManager Program is a console application which aims at managing quiz preparation and execution digitally.

The Java code is connected an xml file. The Java code load and read the content of the file. The program performs the following:

- CRUD Operation: In computer programming, **create, read, update, and delete (CRUD)** are the four basic functions of persistent storage. Alternate words are sometimes used when defining the four basic functions of CRUD, such as retrieve instead of read, modify instead of update, or destroy instead of delete.
- Store questions, options and answers in xml file
- Allows user to export the result of the quiz to a txt file

Project - Specifications

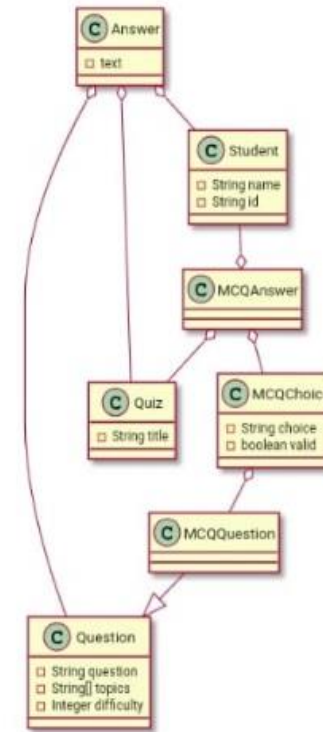
The usual problem while preparing and running an evaluation, is to :

Constitute an appropriate evaluation corresponding of the required level

Reuse former questions

Organize sample evaluations

Correct automatically the MCQ questions.



UML Class Diagram



To handle the most of the possible cases, there are several types of question to consider.

- MCQ Questions
- Open Questions
- Associative Questions

The MCQ questions

The MCQ questions are composed of a question text and a set of possible choices, each choice can be right or wrong. It can also be interesting to add a extra content, like some code extract, some picture or some other kind of media (video, music etc.).

The Open Questions

The open questions are composed only by a question, and some hints, additionally they can be completed by a extra media content.

Associative questions

The associative questions are questions where it necessary to assign some propositions to some descriptions, like in the following.

Common questions attributes


Each question has a some extra attributes to describe the **topic** (tag) and the **difficulty** of the question. Those two fields help to balance the overall exam complexity, and the topics coverage.

Those attributes can be taken in account for automatic exam assembly.


Project (Questions xml) - Code

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<questions>
<question order="1">
<id>1</id>
<label>What is the definition of JVM ?</label>
<difficulty>2</difficulty>
<topics>
<topic>Java</topic>
<topic>Java Virtual Machine</topic>
</topics>
<answers>
<answer>Java Virtual Machine</answer>
</answers>
</question>
```


```
<question order="2">
<id>2</id>
<label>Can you read a .class file ?</label>
<difficulty>3</difficulty>
<topics>
<topic>Java</topic>
<topic>Compilation</topic>
</topics>
<choices>
<choice valid="false">Yes</choice>
<choice valid="true">No</choice>
</choices>
</question>
```




```
<question order="3">
<id>3</id>
<label>What are the main differences between Java and C ?</label>
<difficulty>1</difficulty>
<topics>
<topic>Java</topic>
<topic>C</topic>
</topics>
<choices>
<choice valid="true">OOP</choice>
<choice valid="false">Procedures</choice>
<choice valid="false">Garbage collector</choice>
</choices>
</question>
```




```
<question order="4">
<id>4</id>
<label>If none of the private/protected/public is specified for a member, that member ...
</label>
<difficulty>3</difficulty>
<topics>
<topic>Java</topic>
<topic>Compilation</topic>
</topics>
<choices>
<choice valid="false"> A. Is accessible publicly</choice>
<choice valid="true"> B. Is only accessible by other classes of the same package</choice>
<choice valid="false"> C. Is only accessible from within the class</choice>
<choice valid="false"> D. Is accessible by the class and its subclasses</choice>
</choices>
</question>
```






```
<question order="5">
<id>5</id>
<label>Which of the following file extension types store the source code ? </label>
<difficulty>3</difficulty>
<topics>
<topic>Java</topic>
<topic>Java Virtual Machine</topic>
</topics>
<choices>
<choice valid="true"> A. .java</choice>
<choice valid="false"> B. .class</choice>
<choice valid="false"> C. .source</choice>
<choice valid="false"> D. .code</choice>
</choices>
</question>
```



```
<question order="6">
<id>6</id>
<label>Which of following file extension types store byte code ? </label>
<difficulty>3</difficulty>
<topics>
<topic>Java</topic>
<topic>Java Virtual Machine</topic>
</topics>
<choices>
<choice valid="false"> A. .code</choice>
<choice valid="false"> B. .java</choice>
<choice valid="false"> C. .bytecode</choice>
<choice valid="true"> D. .class</choice>
</choices>
</question>
</questions>
```



Project - Design

Node	Content
?? xml	version="1.0" encoding="UTF-8" standalone="no"
▼ [e] questions	
▼ [e] question	
ⓐ order	1
[e] id	1
[e] label	What is the definition of JVM ?
[e] difficulty	2
▼ [e] topics	
[e] topic	Java
[e] topic	Java Virtual Machine
▼ [e] answers	
[e] answer	Java Virtual Machine
▼ [e] question	
ⓐ order	2
[e] id	2
[e] label	Can you read a .class file ?
[e] difficulty	3
▼ [e] topics	
[e] topic	Java
[e] topic	Compilation
▼ [e] choices	
▼ [e] choice	
ⓐ valid	false
[e] choice	Yes
▼ [e] choice	
ⓐ valid	true
[e] choice	No
▼ [e] question	
ⓐ order	3

Project - Design

Node	Content
<input type="checkbox"/> id	3
<input type="checkbox"/> label	What are the main differences between Java and C ?
<input type="checkbox"/> difficulty	1
▼ <input type="checkbox"/> topics	
<input type="checkbox"/> topic	Java
<input type="checkbox"/> topic	C
▼ <input type="checkbox"/> choices	
▼ <input type="checkbox"/> choice	
<input checked="" type="radio"/> valid	true
<input type="checkbox"/> valid	OOP
▼ <input type="checkbox"/> choice	
<input checked="" type="radio"/> valid	false
<input type="checkbox"/> valid	Procedures
▼ <input type="checkbox"/> choice	
<input checked="" type="radio"/> valid	false
<input type="checkbox"/> valid	Garbage collector
▼ <input type="checkbox"/> question	
<input checked="" type="radio"/> order	4
<input type="checkbox"/> id	4
<input type="checkbox"/> label	If none of the private/protected/public is specified for a member, that member ...
<input type="checkbox"/> difficulty	3
▼ <input type="checkbox"/> topics	
<input type="checkbox"/> topic	Java
<input type="checkbox"/> topic	Compilation
▼ <input type="checkbox"/> choices	
▼ <input type="checkbox"/> choice	
<input checked="" type="radio"/> valid	false
<input type="checkbox"/> valid	A. Is accessible publicly
▼ <input type="checkbox"/> choice	

Project - Design

Node	Content
<ul style="list-style-type: none"> choice <ul style="list-style-type: none"> valid choice <ul style="list-style-type: none"> valid question <ul style="list-style-type: none"> order id label difficulty topics <ul style="list-style-type: none"> topic topic choices <ul style="list-style-type: none"> choice <ul style="list-style-type: none"> valid choice <ul style="list-style-type: none"> valid choice <ul style="list-style-type: none"> valid 	<p>B. Is only accessible by other classes of the same package</p> <p>false</p> <p>C. Is only accessible from within the class</p> <p>false</p> <p>D. Is accessible by the class and its subclasses</p> <p>5</p> <p>5</p> <p>Which of the following file extension types store the source code ?</p> <p>3</p> <p>Java</p> <p>Java Virtual Machine</p> <p>true</p> <p>A. .java</p> <p>false</p> <p>B. .class</p> <p>false</p> <p>C. .source</p> <p>false</p> <p>D. .code</p>

Project - Design

Node	Content
choice	B. .class
valid	false
choice	C. .source
valid	false
choice	D. .code
question	6
order	6
id	Which of following file extension types store byte code ?
label	3
difficulty	
topics	
topic	Java
topic	Java Virtual Machine
choices	
choice	false
valid	A. .code
choice	false
valid	B. .java
choice	false
valid	C. .bytecode
choice	true
valid	D. .class

Github Link

The QuizManager Program is downloadable from github at:
<https://github.com/ishakudogara/2018fundFP-bproject>