

# Selection Test - Java Developer

## Instructions

- Duration for the test is **2 hours**
- Answer all questions as much as possible
- Use Java codes where ever possible.
- Answers provided using pseudo codes will earn lesser marks
- Use of mobile phones during the selection test is strictly prohibited
- Do not write any answers on this paper
- Provide all the answers in provided answer sheets
- Mark the question numbers correctly in the answer scripts
- Attach both the answer papers and scrap sheets together
- Write your name and contact number on the top right corner of the answer sheet.

## Self-Evaluation

Provide a grading on the following based on this scale.



Java Syntax	
Problem solving and logical thinking	
Object Oriented Concepts	
Use of Hibernate	
Writing SQL queries	
SQL triggers and procedures	
Linux commands	
Use of Spring framework	
Design Patterns and Best Practices	
Self-Learning	

## Section 1

1. Define Object in OOP
2. State main three concepts of object oriented programming. Explain each concept
3. State three basic data types of java
4. State the brief definition of a wrapper class
5. State the equivalent wrapper type for the following data types.
  - int
  - boolean
  - long
6. Give an example of Java's dynamic collection type
7. By using Java's naming convention write down the category of the followings
  - Car
  - Touchable
  - run
8. Define class in OOP
9. Define class variable and instance variables
10. Briefly explain stack based virtual machine and register based virtual machine

## Section 2

11. Considering the following method signature.

**`public void repeat(String string, int times)`**

explain how these two arguments are passed to the method in memory

12. Briefly explain as to why the method local variable cannot be accessed from outside sources

Question number 13 and 14 are based on the following code.

```
public class Alpha{
    Alpha alpha= new Alpha();
    public static void main(String[] args){
        Alpha a= new Alpha();
    }
}
```

13. Draw stack and heap diagram for the above code
14. What will happen if you run this code
15. State two ways of achieving thread safety
16. Which gives the best performance from the followings
  - I. PreparedStatement class
  - II. Statement class

State the explanations for your answer

17. Commit and rollback, are the most important elements in database transactions, accordingly, what are the appropriate positions for those two elements in the foll

```
try{
    .....
}catch NumberFormatException(nfex) {
    .....
}
```

18. Considering the following code

```
String str= "";

for(int x= 0; x< "Hi there".length(); x++){

    str+= String.format("Value of X is%d\r\n",x);

}

System.out.println(str);
```

mention three improvements to the above code to achieve better performance

19. State four database transaction isolation levels

### Section 3

Assume the following table resides in a MySQL database.

Table : People		
<u>Id</u>	int	auto increment
Fname	string	not null
Lname	string	not null
City	string	not null
Age	int	not null

Table : Jobs		
<u>Id</u>	int	not null, foreign key
title	string	not null
salary	double	not null
experience	double	not null, stores exp in months

20. Provide SQL statements to retrieve information based on the following criteria (Use sql JOINS where applicable)

- Select all the people
- Select people whose last name starts with 'w'
- Select people whose first name ends with 'i'
- Select people who reside in a city that starts with letter 'g' and whose last name **does not** start with 'f'
- Select people who are aged more than 18
- Select people who are aged 60 or older
- Count the number of jobless people
- Select first name of all those who are employed
- Select all those who are experienced for **more than** 24 months
- Give a 5% increment to all those who have experience between 12 months & 36 months
- Give a 10% increment to all those who are experienced for **more than** 36 months
- Insert your details to the tables. (do not use your real salary figures)

( a-h X 2 marks, i-l X 3 marks = 30 marks)

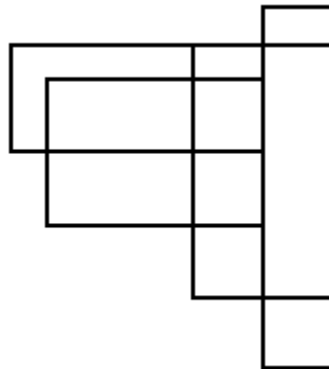
21. Provide the create table statement for the table `People` above. (4 marks)

22. Normalize the following table. (6 marks)

PROJ_NUM	PROJ_NAME	EMP_NUM	EMP_NAME	JOB_CLASS	CHG_HOUR	HOURS
15	Evergreen	103	June E. Arbough	Elect. Engineer	\$84.50	23.8
		101	John G. News	Database Designer	\$105.00	19.4
		105	Alice K. Johnson *	Database Designer	\$105.00	35.7
		106	William Smithfield	Programmer	\$35.75	12.6
		102	David H. Senior	Systems Analyst	\$96.75	23.8

### Section 5 (25 marks)

23. How many four-sided figures appears in the diagram. (5 marks)



24. Which number should replace the "?" mark (5 marks)

17	8	5	5
13	7	5	4
6	12	6	3
10	6	4	?

25. NASA received three messages in a strange language from a distant planet. The scientists studied the messages and found that "Necor Buldon Slock" means "Danger Rocket Explosion" and "Edwan Mynor Necor" means "Danger Spaceship Fire" and "Buldon Gimilzor Gondor" means "Bad Gas Explosion". What does "Slock" mean?

(5 marks)

26. A boy is 4 years old and his sister is three times as old as he is. When the boy is 12 years old, how old will his sister be? (5 marks)

27. Two girls caught 25 frogs. Lisa caught four times as many as Jen did. How many frogs did Jen catch? (5 marks)

**Section 6 (15 marks)**

28. Which is a type of Electrically-Erasable Programmable Read-Only Memory?

29. Who developed Yahoo?

30. Who are the co-creators of UNIX?

31. A billion bytes approximately equates to?

32. Who is the minister for Technology and Research in Sri Lanka?

(3 X 5 marks = 15 marks)