Part 1:

Question 1:

Do you consider writing unit tests as equally important as writing production code?

Select one:

No, production code is more important. Unit tests are only needed if the production code if of poor quality

No, production code is more important. Unit tests should only be created if time allows for that.

Yes because the only way to easily maintain correctly working production code is by having a lot of unit tests for it.

Yes and production code must be 100% covered with unit tests.

Question 2:

We've decided to override equals() method. And hashCode() made a constant value e.g. (return 1;) What will be in this case?

Select one:

Compilation error

Run-time exception

No impact

HashMap with such keys will handle only one element

  
  
Time to get element from HashMap will be longer

Question 3:

Which of the following methods modify the object on which they are called?

Select one:

setValue(int) of java.lang.Integer class.

reverse() of the StringBuffer class.

replace() of the String class.

substring(int) of the String class.

None of these.

Question 4:

Which pattern do you see in the code below:

java.util.Calendar.getInstance();

Select one:

Singleton Pattern

Factory Pattern

Facad Pattern

Adaptor Pattern

Question 5:

You have the following code in a file called Test.java

What will happen if you try to compile and run this?

Select one:

Fails to compile

Runtime error

Compiles and runs with no output

Prints "Hello"

Question 6:

Which of the following statements about the code shown below is true?

https://es.eskill.com/imgsbj/1384851773450~!~mr2_java12_2013.jpg

Select one:

"ints" is a reserved word.

List belongs to java.lang package.

List cannot instantiated.

System.out.println() cannot take List as a parameter.

The left-hand List needs to be parameterized because the right-hand is a parameterized List.

Question 7:

Under what situations does a class get a default constructor?

Select one or more:

All classes in Java get a default constructor.

You have to define at least one constructor to get the default constructor.

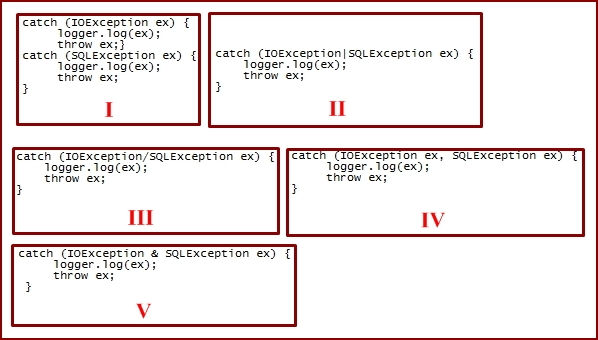
If the class does not define any constructors explicitly.

All classes get default constructor from Object class.

None of the above.

Question 8:

Which of the numbered code snippets below is a valid way to handle more than one type of exception without duplicating the code?



Select one:

I

II

III

IV

V

Question 9:

Which of the following collections maintains the natural order of its elements?

Select one:

HashMap

TreeSet

HashSet

LinkedMap

Question 10:

Which of these statements concerning the use of standard collection interfaces are true?

Select one:

None of the standard collection classes are thread safe.

class HashSet implements SortedSet.

Collection classes implementing List cannot have duplicate elements.

ArrayList can only accommodate a fixed number of elements.

Some operations may throw an UnsupportedOperationException.

Question 11:

Which is the true assertion about nested classes:

Select one:

Nested classes can only be declared as private.

Nested classes are not allowed in the Java language.

NNested classes can not be static.

Nested classes declared as static do not have access to the other members of the enclosing class.

Question 12:

What can be used in Java 8 to avoid possible NullPointerException errors ?

Select one:

Option

Optional

Elvis operator

NotNull annotation

Question 13:

Which of the below statements are true about ArrayList and Vector in Java ?

Select one:

Vector can be resized while ArrayList cannot be

Vector is synchronized while ArrayList is not

ArrayLists can grow but cannot shrink in size, while Vector can both grow and shrink

Vectors allow duplicate values while ArrayList doesnot

Question 14:

Fastest way to print all key/values from the Map

Select one:

a. There is no way to print all keys and values

b. Use for and iterate

c. Iterate by keySet and get value for each key

d. Iterate by values and get key for each value

e. Take entrySet and get key and value from each entry

Question 15:

This class allows users to write a series of messages.

Each message is identified with a timestamp and the name of the thread that wrote the message:

How can we ensure that instances of this class can be safely used by multiple threads?

Select one:

This class is already thread-safe

Replacing StringBuilder with StringBuffer will make this class thread-safe

Synchronize the log() method only

Synchronize the getContents() method only

Synchronize both log() and getContents()

This class cannot be made thread-safe

Question 16:

You see a colleague write the following code, stating that since JDK1.6+ replaces string concatenation with StringBuilder, he does not need to use the append method. What are your thoughts?

String s = "";

**for** (**int** i = **0**; i < **100**; i++) {

s += String.valueOf(i);

}

Select one:

He is correct, append should be reserved for situations where the builder object is long lived.

He is forgetting that the java compiler can only replace + with append for string literals

He is forgetting that the java compiler will not optimize the use of + across loop iterations.

He is correct, the JIT compiler will optimze this code to be identica to StringBuilder and his code is more readable

Question 17:

Which of the following items is true for functional interfaces:

Select one:

Must have exactly one abstract method

Can have multiple abstract methods

Must provide a default method

Must have exactly one concrete method

Question 18:

Which of these statements are true?

Select one:

Objects can explicitly be destroyed using the delete keyword.

An object will be garbage collected immediately after the last reference to the object is removed.

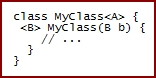
If object obj1 is accessible from obj2 and obj2 is accessible from obj1, then obj1 and obj2 are not eligible for garbage collection.

Once an object has become eligible for garbage collection, it will remain eligible until it is destroyed.

The finalize() method will be invoked at most once on an object.

Question 19:

Which of the following lines of code are valid instantiations of the MyClass class in Java SE 7, taking into consideration the snippet of code shown below?



Select one or more:

new MyClass<Integer>();

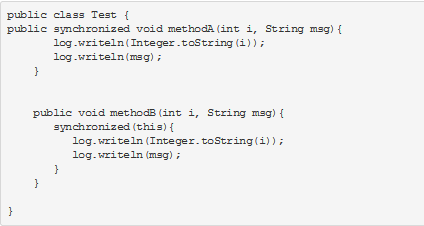
MyClass<Integer> myObject = new MyClass<>("");

MyClass<Integer> myObject = new <String> MyClass<>();

MyClass<Integer> myObject = new <> MyClass("");

new MyClass<Integer>("");

Question 20:



Consider the above code snippet, what of the following statements is true?

Select one:

synchronized keyword is applicable only to blocks and hence cannot be used for methodA.

methodB is more efficient than methodA.

Both the methods are equivalent.

methodA is more efficient than methodB

Question 21:

From the perspective of a Java generational garbage collector, all new objects are considered to be part of:

Select one:

old generation

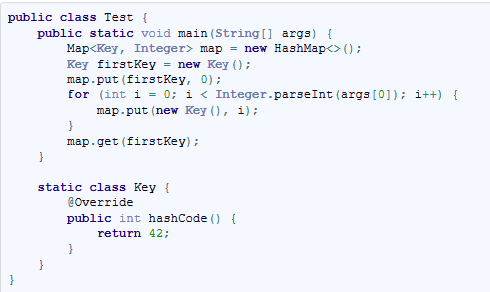
new generation

PermGen

Metaspace

Question 22:

You have the following code in a file called Test.java:



If you execute this program using Java 8 and passing an integer value N > 100 as its first argument, what is the time complexity of the following method call?

map.get(firstKey);

Select one:

O(1)

O(N)

O(sqrt(N))

O(log(N))

The code fails to compile

Question 23:

Which of the following statements are correct?

Select one or more:

A List stores elements in a Sorted Order.

A Set keeps the elements sorted and a List keeps the elements in the order they were added.

A SortedSet keeps the elements in the order they were added.

An OrderedSet keeps the elements sorted.

An OrderedList keeps the elements ordered.

A NavigableSet keeps the elements sorted.

Question 24:

We can improve the performance of a system in which we are reading data at a much higher rate than writing it by using:

Select one:

a. a load balancer

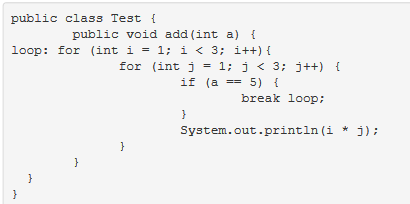
b. database replication

c. database partitioning

d. caching

Question 25:

Given the following code what is the effect of a = 5:



Select one:

Generate a runtime error

Throw an ArrayIndexOutOfBoundsException

Print the values: 1, 2, 2, 4

Produces no output

Question 26:

How to make a custom type support for "foreach" syntax?

Select one:

It is not possible using foreach within custom classes

Extending from an existing java container type,  e.g java.util.Map

Implementing from java.lang.Iterable

Implementing from java.util.Iterator

Question 27:

A situation where a bunch of threads cannot gain regular access to shared resources is described as:

Select one:

Race conditions

Livelock

Deadlock

Starvation

Question 28:

Assuming no object exists in the pool, how many objects would be created from the following statements?

**String** s1 **=** **new** **String**("123");

**String** s2 **=** "123";

**String** s3 **=** "123";

**String** s4 **=** s2;

Select one:

1

2

3

4

Question 29:

Suppose there is a class named MyUser.@PersistenceUnit is already injected, which produces an EntityManagerFactory emf. Which of the following statements, when inserted into the method body, will retrieve the values from the database using Java Persistence API 2, and retrieve the 0th element from the list?

Select one:

MyUser user = (MyUser)emf.createEntityManager().createQuery("SELECT u FROM MyUser u").getResultList();

MyUser user = (MyUser)emf.createEntityManager().createQuery("SELECT u FROM MyUser u").setResultList(0);

MyUser user = (MyUser)emf.EntityManagerFactory().createQuery("SELECT u FROM MyUser u").get(0).getResultList();

MyUser user = (MyUser)emf.createEntityManager().createQuery("SELECT u FROM MyUser user").getResultList().get();

MyUser user = (MyUser)emf.createEntityManager().createQuery("SELECT u FROM MyUser u").getResultList().get(0);

Question 30:

Which of the following libraries allow you to mock the private methods ?

Select one:

mockito

powermock

Mocking private methods is not allowed.

Question 31:

Which of the following allows you to mock private methods ?

Select one:

Mocking of private methods is not allowed as only public methods should be tested.

Mockito

PowerMock

Mockito.spy

Question 32:

How to unstage newly staged files?

Select one:

a. git unstage

b. git reset

c. git rm

d. git fetch

Question 33:

Which of the following are part of a commit in Git?

Select one or more:

Reference to parent commits

A copy of the central repository

A hash that uniquely identifies the commit

All of the above

Question 34:

You have changes in your working directory that you are not ready to commit, and you need to temporarily switch to another branch. Which Git command could you use to store you changes (without committing them) and come back to them later.

Select one:

a. git stash / git stash apply

b. git cherry-pick

c. git reset HEAD --hard

d. There is no such command. You must manually save your changes somewhere on the filesystem.

Question 35:

How do you stage files for a commit?

Select one:

a. git stage

b. git commit

c. git add

d. git reset

Question 36:

How to merge branch A into branch B?

Select one:

a. git checkout A  
git merge B

b. git checkout B  
git merge A

c. git checkout B  
git stash A

d. git checkout B  
git apply A

Question 37:

Which of the below techniques can be used for optimization in SQL?

Select one or more:

a. Add indexes on columns used in WHERE clause

b. Minimize number of full table scans in query

c. Design tables in a way to maximize space on the disk for faster retrieval

d. Use smallest data types possible

e. Do not Declare columns to be NOT NULL

Question 38:

What is the type of subquery used in below SELECT statement

SELECT name1, name2  
FROM employees  
WHERE dept  = (SELECT dept  
FROM employees  
WHERE name1 = 'John'  
AND name2 = 'Doe'  
AND dept = 111  
AND employee\_id = 30);

Select one:

a. Single row subquery

b. Multiple row subquery

c. Both A and B

d. Inline subquery

Question 39:

Characteristics of a Clustered Index?

Select one:

a. The leaf pages do not contain data instead contain pointers to the data

b. There can be multiple such indexes on a single table

c. The data is arranged according to the index key

d. None of the above

Question 40:

What is wrong with the below query. Choose the correct options.

SELECT manager\_name, mgr\_last\_name

FROM managers  
WHERE comm\_percent  = (SELECT min(comm\_percent)  
         FROM managers  
         GROUP BY department\_id);

Select one or more:

a. GROUP BY clause is not required in the sub-query

b. A function cannot be used in a subquery SELECT statement

c. The single row subquery gives multiple records

d. Use of "=" operator is invalid; an IN operator will work correctly

Question 41:

Which one of the following statements about SQL Server Indexes is wrong?

Select one:

a. Indexes are created in an existing table to locate rows more quickly and efficiently

b. It is possible to create an index on one or more columns of a table

c. A table is scanned when index is not available

d. Indexes can only be implemented on integer datatypes

e. A and C are correct

f. C and D are correct

Question 42:

The SQL statement

SELECT SUBSTR( ‘l23456789', INSTR( ‘abcabcabc', ‘b’ ), 4)  FROM DUAL ;

prints

Select one:

a. 6789

b. 2345

c. 1234

d. 456789

Question 43:

The SQL statement

SELECT SYSDATA FROM DUAL ;

prints 06-FEB-05;

Consider the three SQL statements

SELECT TO\_DATE( (LTRIM (RTRIM(‘NOV 23, 2005'))), ‘Mon DD, YY’) FROM DUAL; -- Statement 1

SELECT TO DATE( (RTRIM (LTRIM(‘ NOV 23, 2005 ‘))), ‘Mon DD, YY’ FROM DUAL; -- Statement 2

SELECT TO DATE( ‘NOV 23, 2005', ‘Mon DD, YY’) FROM DUAL;  -- Statement 3

Which of these statements gives the same output?

Select one:

a. Only Statement 1 and Statement 2

b. Only Statement 1 and Statement 3

c. Only Statement 2 and Statement 3

d. All the three statements give the same output

Question 44:

SQL queries usually use some values entered by the user. In this case, in order to prevent security breaches caused by these values, you may:

Select one:

a. place a firewall between the database server and the web server

b. escape user data so that it cannot be interpreted as commands by the DBMS

c. use stored procedures

d. use object-oriented programming so that each query can be defined as a separate class

Question 45:

Which of the following is true about Restful web services?

Select one:

a. RESTful web services provide access to resources

b. Each resource is identifiable by an Id / URI

c. RESTful web services can represent resources in various formats (e.g JSON, XML)

d. All of the above

Question 46:

Which of the following HTTP methods are considered 'safe' AND 'idempotent'?

Select one or more:

a. GET

b. HEAD

c. POST

d. PUT

Question 47:

Let's consider that we have a REST web service for handling interview questions deployed at *http://interview-questions.com*. What HTTP method should this web service support in order to allow clients to create new questions at a particular location (e.g. at *http://interview-questions.com/question/1*)?

Select one:

a. PUT

b. POST

c. GET

d. PATCH

Question 48:

How to make sure that a docker container is restarted automatically when it exits due to the application code running inside it.

Select one:

a. It is not possible

b. Add a script to the container which automatically restarts container

c. Add restart policy to dockerfile

d. Set restart policy when running the container

Question 49:

You have some Docker containers and need to launch from a common image, but with a slightly different configuration depending on the environment in which you’ll launch them.

What are the different configuration management strategies you could use to get those configurations into the Docker containers?

Select one or more:

a. Set the configurations via environment variables

b. Store low-level settings in Docker Registry

c. Use Ansible Galaxy to do the configuration management

d. Map configuration files via Docker volumes

Question 50:

**Coding Challenge**

The next question(s) in this step are algorithm coding tasks. Please note that the “check” button is disabled in our system and will NOT provide you feedback on syntax errors or computational results. You are required to make sure the code compiles and works as required in the question and can do so using your own IDE or text editor.

Conan Edogawa got tired of solving cases, and invited his friend, Professor Agasa, over. They decided to play a game of cards. Conan has n cards, and the ithcard has a number ai written on it. They take turns playing, starting with Conan. In each turn, the player chooses a card and removes it. Also, he removes all cards having a number strictly lesser than the number on the chosen card. Formally, if the player chooses the ith card, he removes that card and removes the jth card for all j such that aj < ai.

A player loses if he cannot make a move on his turn, that is, he loses if there are no cards left. Predict the outcome of the game, assuming both players play optimally.

## Input Format:

The first line contains an integer n — the number of cards Conan has.

The next line contains n integers a1, a2, ..., an, where ai is the number on the ith card.

## Constraints:

* (1 ≤ n ≤ 105)
* (1 ≤ ai ≤ 105)

## Output Format:

If Conan wins, print "Conan" (without quotes), otherwise print "Agasa" (without quotes).

## Sample Input (0):

3

4 5 7

## Sample Output (0):

Conan

## Sample Input (1):

2

1 1

## Sample Output (1):

Agasa

## Note

In the first example, Conan can just choose the card having number 7 on it and hence remove all the cards. After that, there are no cards left on Agasa's turn.

In the second example, no matter which card Conan chooses, there will be only one card left, which Agasa can choose. After that, there are no cards left when it becomes Conan's turn again.

**For example:**

| **Input** | **Result** |
| --- | --- |
| 3  4 5 7 | Conan |
| 2  1 1 | Agasa |

Answer:(penalty regime: 0 %)

import java.io.\*;

import java.util.\*;

import java.text.\*;

import java.math.\*;

import java.util.regex.\*;

public class Tester {

/\*\*

\* Complete the function below.

\* DONOT MODIFY anything outside this function!

\*/

static String conanOrAgasa(int[] cards) {

return null;

}

/\*\*

\* DO NOT MODIFY THIS METHOD!

\*/

public static void main(String[] args) throws IOException {

Scanner in = new Scanner(System.in);

int n = in.nextInt();

int[] cards = new int[n];

for (int i = 0; i < n; i++) {

cards[i] = in.nextInt();

}

// call conanOrAgasa function and print output

System.out.println(conanOrAgasa(cards));

}

}

Part 2:

Next Questions will be for one project called “Cross-Ride”. Please start reading and answering

questions in same order, because they will increase your knowledge about Cross-Ride

incrementally.

First question is a hands-on coding exercise. Remaining questions are free response and

asking how you would approach the problem and what solutions you'd consider without any

implementation. All Questions are mandatory.

Make sure to answer all 5 questions before submission. [Go to first question](https://app.crossover.com/x/)

Question 1:

We have prepared a project assessment. Please download the project from [this link](http://techtrial.s3.amazonaws.com/TrialAttachments/cross-ride-java.zip).  Review the Readme file with instructions on how to proceed. You can use an IDE of your choice.

Once completed please extract a git patch file<steps are in readme file>, Store your file in a shared location where Crossover team can access and download it for evaluation. and add your sharable link in the answer field of this question.

Please extract the patch file using provided commands not using IDE.

Question 2:

Product Owner asked you to implement a new feature to send SMS notification on every completed ride request. SMS notification is a rest based service and is only available in staging server. You are provided with detailed API specifications for SMS notification service.

How will you start development and test your code without access to actual rest API?

 NO IMPLEMENTATION REQUIRED IN THIS QUESTION.

Question 3:

After launching, the users of Cross-Ride application grows and database size grows exponentially. As a consequence, this API of top ride sharing users /api/top-rides becomes very slow. Keeping in mind the current structure of database tables, propose three different possible solutions/improvements to increase the response time of this API?

NO IMPLEMENTATION REQUIRED IN THIS QUESTION.

Question 4:

Describe one hard technical problem you faced in your last major project.

Please describe:

* What was the problem and the impact of it?
* What were the solutions considered and final choice?
* What was the outcome?
* What did you learn from solving this problem and what would you re-use in your future projects?

Question 5: CCAT Test