1. How many string literals will be created in the constant pool of the code below

public class Strings {

private static String STATIC="working";

private String a = null;

public static void main(String ads[]){

String a="working";

Strings st= new Strings();

st.a="working";

System.out.println(Strings.STATIC==a);

}

}

A. 1

B. 2

C. 3

D. None of the above

2. What will be the output of the following code ?

public class Strings {

public static void main(String ads[]){

String arr[]={"meow","bray","moo"};

String a="meow";

System.out.println(arr[0]==a);

}

}

1. output: true
2. output: false (wrong)
3. Compiler error: at line 5
4. Runtime error at line 5

3. What is the output of following code snippet ?

public class TestOverriding {

    public static void main(String aga[]){

    Test t =new Fest();

    t.tests();

    }

}

class Test{

     void tests(){

        System.out.println("Test class : tests");

    }

}

class Fest extends Test{

    static void tests(){

        System.out.println("Fest class : tests");

    }

}

A. Code compiles fine , but doesn't give output

B. Code complains of illegal override at line 13

C. Prints "Fest Class : tests"

D. Prints "Test Class : tests"

4. What is the output of the following code snippet  ?

public class TestOverriding {

    public static void main(String aga[]){

    Super superRef =new Sub();

    Sub subRef = new Sub();

    Super suRef=new Super();

    superRef.tests();

    subRef.tests();

    suRef.tests();

    }

}

class Super{

     public static void tests(){

        System.out.println("Super static");

    }

}

class Sub extends Super{

    public static void tests(){

        System.out.println("Sub static");

    }

}

A. Super static

Super static

Super static

B. Sub static

Sub static

Sub static

C. Super static

Sub static

Super static

D. Sub static

Super static

Sub static

E. Compilation error at 7,8,9

F. Compilation error at 18

5. Is the following code is a valid override?

class MyClass {

   void add(int i, int ti) {

   // I will do later

  }

}

class MySubclass extends MyClass {

  public void add(int i, int ti) {

   // Will do now

  }

}

1. True
2. False

6. What is the output of the following program ?

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10 | import java.util.HashMap;  import java.util.Map;  public class MapTest {      public static void main(String aga[]){          Map m= new HashMap();          m.put(null, "Test");          m.put(null,"Fest");          System.out.println(m);      }  } |

A. {null=Fest}

B. NullPointerException at 6

C. {null=Test}

D. Compilation error at 7 and 8

E. Compilation error at 8 , about can't override the value "Test"

7. What is the output of the following program ?

import java.util.HashSet;

class Animal {

    public int i=12;

    public Animal(){

        i=13;

    }

    public String toString(){

        return "Animal"+i;

    }

}

public class Test {

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

       HashSet<animal> s= new HashSet<animal>();

       s.add(new Animal());

       s.add(new Animal());

       for(Animal a : s){

           System.out.println(a);

       }

    }

}

A. Animal 0

B. Animal 13

C. Animal 13

D. Animal 13

E. Runtime error about duplicate elements

8. Which of the following is correct about Connection interface of JDBC?

A - Connection interface consists of methods for contacting a database.

B - It represents communication context.

C - Both of the above.

D - none of the above.

9. Which of the following type of JDBC driver is typically used for development and testing purposes only?

A - Type 1

B - Type 2

C - Type 3

D - Type 4

10. Which of the following means that the ResultSet can only be read?

A - ResultSet.CONCUR\_READ\_ONLY

B - ResultSet.CONCUR\_UPDATABLE

C - ResultSet.READ\_ONLY

D - ResultSet.UPDATABLE

11. Which of the following is true about HTTP Post method?

A - The POST method sends the encoded user information as a seperate message to page request.

B - The POST method is used to submit form data normally.

C - Both of the above.

D - None of the above.

12. Which of the following code retrieves the context of the request?

A - new ClassContextPath()

B - request.getContextPath()

C - response.getContextPath()

D - None of the above.

13. Which of the following is true about javax.servlet.error.status\_code?

A - This attribute gives exact error message which can be stored and analysed after storing in a java.lang.String data type.

B - This attribute gives information about exception type which can be stored and analysed after storing in a java.lang.Class data type.

C - This attribute gives status code which can be stored and analysed after storing in a java.lang.Integer data type.

D - This attribute gives information about URL calling the servlet and it can be stored and analysed after storing in a java.lang.String data type.

14. Which of the following code is used to update an attribute in a HTTP Session object in servlets?

A - session.setAttribute(name,value)

B - session.alterAttribute(name,value)

C - session.updateAttribute(name,value)

D - None of the above.

15. Which of the following code is used to get three-letter abbreviation for this locale's country in servlets?

A - request.getISO3Country()

B - Locale.getISO3Country()

C - response.getISO3Country()

D - None of the above.

16. Which of the following is not an ORM framework?

A - Castor

B - Spring DAO

C - Hibernate

D - NoSQL

17. Which of the following is true about SessionFactory object in hibernate?

A - SessionFactory object configures Hibernate for the application using the supplied configuration file.

B - SessionFactory object allows for a Session object to be instantiated.

C - The SessionFactory is a thread safe object.

D - All of the above.

18. Session.createSQLQuery creates a new instance of Query for the given HQL query string.

A - true

B - false

19. Which method is used to save or update the state of the given instance from the underlying database?

A - Session.saveOrUpdate()

B - Session.keep()

C - Session.update()

D - Session.load()

20. Which of the following element maps java.util.List property in hibernate?

A - <set>

B - <list>

C - <bag>

D - <map>

21. Which of the following element is used to represent one-to-one relationship in hibernate?

A - <many-to-one>

B - <many-one>

C - <ManyToOne>

D - None of the above.

22. Which of the following database is supported by Hibernate?

A - DB2/NT

B - PostgreSQL

C - Sybase SQL Server

D - All of the above

23. Which of the following is a core component of Hibernate?

A - Transaction

B - SessionFactory

C - Session

D - All of the above

24. Which of the following is true about INSERT CLAUSE in HQL?

A - HQL supports INSERT INTO clause only where records can be inserted from one object to another object.

B - HQL supports INSERT INTO clause without any restriction.

C - Both of the above.

D - None of the above.

25. Which of the following class implements an encoder for encoding byte data using the Base64 encoding scheme in Java8?

A - Base64.Decoder

B - Base64.Encoder

C - Base64Decoder

D - Base64Encoder

***CODING PROBLEMS***

1. Order Processing using Multithreading

This class tests the Worker class. It invokes the run() method of a Worker

\* instance.

The Worker class holds an instance of a queue of Order objects.

The max size of this queue is 5. 100 Orders are generated asynchronously and placed in the queue.

Those 100 Orders are processed concurrently as they are placed in the

queue. Any time we are waiting for Orders to be FULFILLED, this should be printed to standard output. An Order is simply a class with a state field and an order number (1-100). An Order can be in either NEW or FULFILLED states. When a new Order is created, the default state is NEW. Whenever there is a state change, this is printed to standard output. The test ends when all Orders are FULFILLED.

2. Rotate Array

A zero-indexed array A consisting of N integers is given. Rotation of the array means that each element is shifted right by one index, and the last element of the array is also moved to the first place.

For example, the rotation of array A = [3, 8, 9, 7, 6] is [6, 3, 8, 9, 7]. The goal is to rotate array A K times; that is, each element of A will be shifted to the right by K indexes.

Write a function:

struct Results solution(int A[], int N, int K);

that, given a zero-indexed array A consisting of N integers and an integer K, returns the array A rotated K times.

For example, given array A = [3, 8, 9, 7, 6] and K = 3, the function should return [9, 7, 6, 3, 8].

Assume that:

• N and K are integers within the range [0..100];

• each element of array A is an integer within the range [−1,000..1,000].

In your solution, focus on **correctness**. The performance of your solution will not be the focus of the assessment.

3. Permutation

A non-empty array A consisting of N integers is given.

A *permutation* is a sequence containing each element from 1 to N once, and only once.

For example, array A such that:

A[0] = 4

A[1] = 1

A[2] = 3

A[3] = 2

is a permutation, but array A such that:

A[0] = 4

A[1] = 1

A[2] = 3

is not a permutation, because value 2 is missing.

The goal is to check whether array A is a permutation.

Write a function:

int solution(int A[], int N);

that, given an array A, returns 1 if array A is a permutation and 0 if it is not.

For example, given array A such that:

A[0] = 4

A[1] = 1

A[2] = 3

A[3] = 2

the function should return 1.

Given array A such that:

A[0] = 4

A[1] = 1

A[2] = 3

the function should return 0.

Assume that:

• N is an integer within the range [1..100,000];

• each element of array A is an integer within the range [1..1,000,000,000].

Complexity:

• expected worst-case time complexity is O(N);

• expected worst-case space complexity is O(N) (not counting the storage required for input arguments).

4. Web Application with REST API + AJAX

Create a Java Web Application to consume the following Github Users REST API. List out all the Usernames and on click of a name, display the Photo’s of all his/her follwers asynchronously next to the Username.

<https://api.github.com/users>

**Technology Stack: HTML5, Bootstrap CSS, jQuery, AJAX**