

Question - 1
Java Keywords

SCORE: 5 points

 Easy Java

Which keyword is used to take control out of the enclosing loop?

- for
- break
- if
- continue

Question - 2
Java Constants

SCORE: 5 points

 Easy Java

How is a constant declared so that it can be accessed without making an instance of a class in which it is declared?

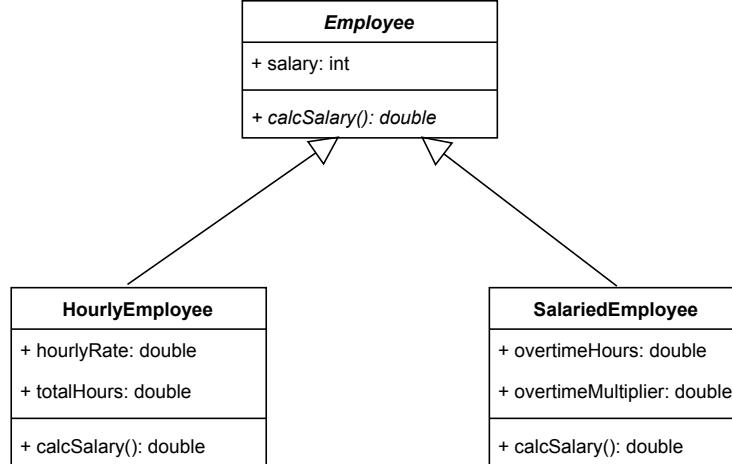
- public final int intConst
- public static int intConst
- public static final int intConst
- public int intConst

Question - 3
Classes and Objects

SCORE: 5 points

 classes and objects Inheritance Abstract Class method overriding Easy

Observe the following class diagram and state



Which of the following statements are true regarding it?

- Employee class is abstract and cannot be instantiated.
- Both HourlyEmployee and SalariedEmployee class should override the calcSalary() method, in order to get instantiated.
- Employee class cannot contains concrete methods.
- There is a composition relationship between Employee and the other two classes.

Question - 4

SCORE: 5 points

Java Interface

Interfaces Easy

What is the output of the following program?

```
@FunctionalInterface
public interface MyInterface {
    void foo();
}
```

```
public class MyClass implements MyInterface {
    public void foo() {
        System.out.println("Hello");
    }
}
```

```
public class MyClass2 extends MyClass implements MyInterface{
    public void foo() {
        System.out.println("Hello 2");
    }
}
```

```
public class Main extends MyClass2{
    public static void main(String[] args) {
        MyClass c = new MyClass2();
        c.foo();
    }
}
```

- Hello 2
- Hello
- MyClass2 cannot extend a class and an interface at the same time.
- Runtime error

Question - 5

Java Operators

SCORE: 5 points

Java

Easy

What is the value of the variable z in the statement `int x = 5; int y = x++; int z = ++y;` ?

- 5
- 6
- 7
- 8

Question - 6

Java Variables

SCORE: 5 points

Java

Easy

What is the value of the variable c in the statement `int a = 5; int b = 6; int c = a = b;` ?

- 5
- 11
- 56
- 6

Question - 7

Java Inheritance Overriding

SCORE: 5 points

Java Polymorphism Abstraction Inheritance OOPS Easy

What will be the output of the following code block?

Animal.java

```
public abstract class Animal
{
    public abstract void makenoise();
}
```

Dog.java

```
public class Dog extends Animal
{
    public void makenoise()
    {
        System.out.println("Make Dog Noise...");
    }
}
```

GoldenRetriever.java

```
public class GoldenRetriever extends Dog
{
    public void makenoise()
    {
        super.makenoise();
        System.out.println("Make Golden Retriever Noise");
    }
    public static void main(String ... arg)
    {
        Dog dog=new GoldenRetriever();
        dog.makenoise();
    }
}
```

- Make Dog Noise...
- Make Golden Retriever Noise
- Make Dog Noise...
Make Golden Retriever Noise
- throws ClassCastException on runtime

Question - 8 Java String Pool

SCORE: 5 points

[Java](#) [Strings](#) [Language Proficiency](#) [Memory Allocation](#) [Easy](#)

How many strings will be added to the string pool upon execution of the following code block?

```
public static void main(String[] args) {
    String str = "Hello There!";
    String mtr = "Hello" + " " + "There" + "!";
    String dtr = "Hello " + "There" + "!";
    String gtr = "Hello There" + "!";
}
```

- 1
- 3
- 5
- 7

Question - 9

SCORE: 5 points

Which of the following operators is overloaded for string objects? Easy Java Polymorphism Operator Overloading**Which of the following operators is overloaded for string objects?**

- +
-
- ==
- >>
- Java doesn't support operator overloading

Question - 10

SCORE: 5 points

Select the correct statement, from the options below: Java Medium Garbage Collection**Select the correct statement, from the options below:**

- If object obj1 can access object obj2 that is eligible for garbage collection, then obj1 is also eligible for garbage collection
- Objects can be explicitly destroyed using the keyword delete
- An object will be garbage collected immediately after it becomes unreachable
- None of the above

Question - 11

SCORE: 5 points

Given the following code, what is the most likely result: Java OOPS Programming Easy**Given the following code, what is the most likely result:**

```
import java.util.*;
public class Compares
{
    public static void main( String args[])
    {
        String[] cities = {"Bangalore", "Pune", "San Francisco", "New York City"};
        MySort ms = new MySort();
        Arrays.sort(cities, ms);
        System.out.println(Arrays.binarySearch(cities, "New York City"));
    }
    static class MySort implements Comparator
```

```
{  
    public int compare( String a, String b)  
    {  
        return b.compareTo(a);  
    }  
}
```

- 1
- 1
- 2
- Compilation fails

Question - 12

Bitwise Operators in Java

SCORE: 5 points

[Java](#) [Easy](#) [Operators](#)

Consider the following Java snippet:

```
int x = 3 & 5;  
int y = 3 | 5;
```

The values of 'x' and 'y' (respectively) are:

- 1,7
- 2,8
- 8,-2
- 1,8
- 2,7

Question - 13

JDK Design Patterns

SCORE: 5 points

[Java](#) [Algorithms](#) [Easy](#)

One example of _____ Design pattern from JDK itself is the Collections.sort() method and the Comparator Interface, through which we can specify different criteria for sorting a collection of objects.

Which of the following is the best fit for the blank in this line?

- Singleton
- Adapter
- Factory
- Strategy

Question - 14

SCORE: 5 points

Value of k After Function Runs

Java OOPS Easy Programming

Which is true of the following program?

```
public class TestFirstApp {  
    static void doIt(int x, int y, int m) {  
        if (x == 5) {  
            m=y;  
        } else {  
            m=x;  
        }  
    }  
  
    public static void main(String[] args) {  
        int i=6, j=4, k=9;  
        TestFirstApp.doIt(i,j,k);  
        System.out.print(k);  
    }  
}
```

- Doesn't matter what the values of i and j are, the output will always be 5 .
- Doesn't matter what the values of k and j are, the output will always be 5 .
- Doesn't matter what the values of i and j are, the output will always be 9 .
- Doesn't matter what the values of k and j are, the output will always be 9 .

Question - 15

SCORE: 5 points

Java Types

Easy Java

Which of the following is not a Java primitive type?

- String
- float
- double
- int
- byte

Question - 16

SCORE: 5 points

Method Overloading

Methods Method overloading Easy

```

public void foo(ArrayList<String> data)
{
    //some code
}
public void foo (ArrayList<Integer> data)
{
    //some code
}
public ArrayList<String> foo (ArrayList<String> data)
{
    //some code
}
private void foo(List<String> data)
{
    //some code
}
public void foo(ArrayList<String> data, boolean flag)
{
    //some code
}

```

Which of the statements are true regarding this code?

- All the methods are considered as overloaded methods, except for private void foo(List data) because it has a private access modifier.
- All methods can coexist without issue.
- 'foo(ArrayList)' clashes with 'foo(ArrayList)', as both methods have the same erasure.
- private void foo(List data) {} is an overloaded method, while public ArrayList foo (ArrayList data) {} is not.

Question - 17 Java BufferedReader

SCORE: 5 points

Easy

file handling

file1.txt

Hello

World

file2.txt

Hackerrank

What is the output of this code?

```

import java.io.*;
public class Main{
    public static void main(String args[]) throws IOException {
        String str1, str2, str=null;
        File file1 = new File("file1.txt");
    }
}

```

```

File file2 = new File("file2.txt");
BufferedReader br1 = new BufferedReader(new FileReader(file1));
BufferedReader br2 = new BufferedReader(new FileReader(file2));
while ((str1 = br1.readLine()) != null)
{
    str2 = br2.readLine();
    if(str2 != null)
    {
        str=str1+" "+str2;
        System.out.println(str);
    }
    br1.close();
}
}
}

```

- Hello World
IOException: Stream closed
- Hello Hackerrank
World
- Hello World Hackerrank
- Hello Hackerrank
IOException: Stream closed

Question - 18

Java parseInt

SCORE: 5 points

Exception Handling Easy

What is the output of the following code?

```

public class Main{
    public static void main(String[] args) {
        try
        {
            int[] a = new int[5];
            String s="1.0";
            try
            {
                System.out.println(Integer.parseInt(s+a[4]));
            }
            catch (Exception e)
            {
                System.out.println("Exception 1 occurs. "+ e.getClass());
            }
            throw new Exception();
        }
        catch (Exception e) {
            System.out.println("Exception 2 occurs");
        }
    }
}

```

- 1
Exception 2 occurs

- Exception 1 occurs. class java.lang.NumberFormatException
Exception 2 occurs
- Exception 1 occurs. class ArrayIndexOutOfBoundsException
Exception 2 occurs
- Compile-Time Error

SCORE: 5 points

Question - 19

Java Design Pattern

Easy Design Patterns

The following code represents which design pattern?

```
class Student {  
    private static Student s;  
    private Student() {}  
    public static Student getInstance() {  
        if(s == null) {  
            s = new Student();  
        }  
        return s;  
    }  
}  
class Main {  
    public static void main(String[] args) {  
        Student s;  
        s= Student.getInstance();  
    }  
}
```

- Singleton Design Pattern
- Factory Design Pattern
- Adapter Design Pattern
- Iterator Pattern

SCORE: 5 points

Question - 20

Java Concatenate

Interfaces Easy

In main(), after creating an object of MyClass, which code option returns the string s concatenated with the sum of two numbers x and y?
For example, if s = 'HackerRank', x = 2, and y = 3, the output should be HackerRank 5

```
public interface MyInterface {  
    String foo(String s, int x, int y);  
}
```

```
public class MyClass {  
    public String foo2(MyInterface i, String s, int x, int y) {  
        return i.foo(s, x, y);  
    }  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        MyClass myClass = new MyClass();  
        // code to write  
    }  
}
```

- String result = myClass.foo2((s, x, y) -> s + " " + x + y, "HackerRank", 2, 3); System.out.println(result);
- String result = myClass.foo2((s, x, y) -> s + " " + (x + y), "HackerRank", 2, 3); System.out.println(result);
- String result = myClass.foo2->(s + " " + x + y, "HackerRank", 2, 3); System.out.println(result);
- String result = myClass.foo2((s, x, y) -> "HackerRank " + 2 + 3); System.out.println(result);

Question - 21 Default Packages

SCORE: 5 points

Java Easy

Which of the following packages is imported by default?

- java.lang
- java.io
- java.math
- java.text

Question - 22 Automatic Imports

SCORE: 5 points

Java Easy

Classes from packages **java.lang**, **java.io** and **java.util** are imported by default without having to be specified explicitly using import statements in a Java program.

True or False?

- True
- False

Question - 23

SCORE: 5 points

Interfaces

Java Easy Interfaces OOPS Programming

Which of the below is true about Interfaces?

- Interface can contain constructors
- A class can implement just one interface
- An interface can declare public and protected method only
- An interface cannot have instance variables

Question - 24

SCORE: 5 points

Will This Compile? 2

Java Medium OOPS Programming

What is the output for the below code ?

```
public class A {
    public void printName(){
        System.out.println("Value-A");
    }
}
public class B extends A{
    public void printName(){
        System.out.println("Value-B");
    }
}

public class C extends A{
    public void printName(){
        System.out.println("Value-C");
    }
}

1. public class Test{
2.     public static void main (String[] args) {
3.         B b = new B();
4.         C c = new C();
5.         b = c;
6.         newPrint(b);
7.     }
8.     public static void newPrint(A a){
9.         a.printName();
10.    }
11. }
```

- Value-B
- Value-C

Compilation fails due to an error on lines 5

Compilation fails due to an error on lines 9

SCORE: 5 points

Question - 25

Java Class Path

Java

Easy

There is a java file named *Test.java* that needs access to a class contained in *app.jar* in the *exam* directory.

Which of the following commands sets classpath to compile clean?

javac -classpath exam/app.jar Test.java

javac -classpath app.jar Test.java

javac -classpath exam Test.java

None of the above

SCORE: 5 points

Question - 26

Java Print a Sum

Java

Language Proficiency

Classes

Inheritance

OOPS

Easy

What is the output of the following code?

```
1. public class A {  
2.     int add(int i, int j){  
3.         return i+j;  
4.     }  
5. }  
6. public class B extends A{  
7.     public static void main(String argv[]){  
8.         short s = 9;  
9.         System.out.println(add(s,6));  
10.    }  
11. }
```

Compilation fails due to an error on line 2

Compilation fails due to error an on line 9, non-static method referenced from a static context.

Compilation fails due to a type mismatch on line 9.

15

SCORE: 5 points

Question - 27

What is result of the following command?

Java

Easy

What is result of the following command?

```
1. import java.util.*;
2. class Priorities {
3.     public static void main(String[] args) {
4.         PriorityQueue ToDo = new PriorityQueue();
5.         ToDo.add("dishes");
6.         ToDo.add("laundry");
7.         ToDo.add("bills");
8.         ToDo.offer("bills");
9.         System.out.print(ToDo.size() + " " + ToDo.poll());
10.        System.out.print(" " + ToDo.peek() + " " + ToDo.poll());
11.        System.out.println(" " + ToDo.poll() + " " + ToDo.poll());
12.    }
13. }
```

- 3 bills dishes laundry null null
- 3 bills bills dishes laundry null
- 3 dishes dishes laundry bills null
- 4 bills bills dishes laundry null
- 4 bills bills bills dishes laundry
- 4 dishes laundry laundry bills bills
- Compilation fails.
- An exception is thrown at runtime.

Question - 28

SCORE: 5 points

Which of the following statements is correct? Select the one correct answer.

Easy Java

Which of the following statements is correct? Select the one correct answer.

- Each Java file must have exactly one package statement to specify where the class is stored.
- If a Java file has both an import and a package statement, the import statement must come before package statement.
- A Java file must have at least one class defined.
- If a Java file has a package statement, it must be the first statement (except comments).

Question - 29

SCORE: 5 points

Arrays in Java

Java Easy Data Structures Arrays

Which of the following statements is true?

- Arrays in Java are essentially objects.
- It is not possible to assign one array to another. However, individual elements of the array can be assigned.
- Array elements are indexed from 1 to the size of the array.
- If a method tries to access an array element beyond its range, a compile warning is generated.

Question - 30

Java: Inner Classes

SCORE: 5 points

Application Development Java Language Proficiency Problem Solving Easy

Examine the following Java code, it includes an inner class, what will be the output of the following code?

```
public final class Test4 {  
    class Inner {  
        void test() {  
            if (Test4.this.flag) {  
                sample();  
            }  
        }  
    }  
    private boolean flag = true;  
    public void sample() {  
        System.out.println("Sample");  
    }  
    public Test4() {  
        (new Inner()).test();  
    }  
    public static void main(String args []) {  
        new Test4();  
    }  
}
```

- Prints out "Sample"
- Program produces no output but terminates correctly
- Program does not terminate.
- The program will not compile

Question - 31

Calling a Constructor

SCORE: 5 points

Application Development Java Easy

Where in a constructor, can you place a call to a constructor defined in the super class?

- Anywhere
- The first statement in the constructor
- The last statement in the constructor

Question - 32

SCORE: 5 points

Which of the following statements is correct?

Application Development Java Easy

Which of the following statements is correct for a method which is overriding the following method:

```
public void add(int a) { ... }
```

- the overriding method must return void
- the overriding method must return int
- the overriding method can return whatever it likes

Question - 33

SCORE: 5 points

Java: Find the Output

Java Exception Handling Language Proficiency Arithmetic Operators Easy

Consider the following Java code snippet:

```
public int divide(int a, int b) {
    int c = -1;

    try {
        c = a / b;
    }
    catch (Exception e) {
        System.err.print("Exception ");
    }
    finally {
        System.err.println("Finally ");
    }

    return c;
}
```

What will our code *print* when we call *divide(4, 0)*?

- Exception Finally
- Finally Exception
- Exception
- Finally
- No output
- 1

Question - 34

SCORE: 5 points

What is the correct declaration of an abstract method that is intended to be public?

Application Development Java Easy

What is the correct declaration of an abstract method that is intended to be public?

- public abstract void add();
- public abstract void add() {}
- public abstract add();
- public virtual add();

Question - 35

SCORE: 5 points

Java: String Array

Application Development Java Arrays Language Proficiency Problem Solving Easy

Which of the following Java declaration of the String array is correct?

- String temp [] = new String {"j" "a" "z"};
- String temp [] = { "j" "b" "c"};
- String temp = {"a", "b", "c"};
- String temp [] = {"a", "b", "c"};

Question - 36

SCORE: 5 points

Which of the following will output -4.0 ?

Java Language Proficiency Math Easy

Which of the following will output -4.0 ?

- System.out.println(Math.floor(-4.7));
- System.out.println(Math.round(-4.7));
- System.out.println(Math.ceil(-4.7));
- System.out.println(Math.Min(-4.7));

Question - 37

SCORE: 5 points

Java: Classes

Application Development Java Language Proficiency OOPS Problem Solving Easy

Which of the following are true for Java Classes?

- The Void class extends the Class class.
- The Float class extends the Double class.
- The System class extends the Runtime class.
- The Integer class extends the Number class.

Question - 38

Java : Object Class

SCORE: 5 points

[Application Development](#) [Java](#) [Language Proficiency](#) [Problem Solving](#) [Easy](#)

Which of the following is true?

- The Class class is the superclass of the Object class.
- The Object class is final.
- The Class objects are constructed by the JVM as classes are loaded by an instance of java.lang.ClassLoader
- None of the above

Question - 39

Declarations

SCORE: 5 points

[Application Development](#) [Java](#) [Easy](#)

Given the following declarations

```
String s1=new String("Hello");
String s2=new String("there");
String s3=new String();
```

Which of the following are legal operations?

- s3=s1 + s2;
- s3=s1 - s2;
- s3=s1 & s2
- s3=s1 && s2

Question - 40

Java String Concatenation

SCORE: 5 points

[Application Development](#) [Java](#) [Easy](#)

What is the output of the following program?

```
public class Question {  
    public static void main(String args[]) {  
        String s1 = "abc";  
        String s2 = "def";  
        String s3 = s1.concat(s2.toUpperCase());  
        System.out.println(s1+s2+s3);  
    }  
}
```

- abcdefabcdef
- abcabcDEFDEF
- abcdefabcDEF
- None of the above

Question - 41 "Syntax Review 2"

SCORE: 5 points

Application Development Java Easy

What is the result of trying to compile and run this program?

```
public class Test {  
    public static void main(String[] args){  
        int[] a = {1};  
        Test t = new Test();  
        t.increment(a);  
        System.out.println(a[a.length - 1]);  
    }  
    void increment(int[] i){  
        i[i.length - 1]++;  
    }  
}
```

- It generates a compiler error.
- It compiles and prints 2.
- It compiles and prints 1.
- It compiles and generates an ArrayIndexOutOfBoundsException at runtime.

Question - 42 Java : Division Check

SCORE: 5 points

Java Language Proficiency Easy Arithmetic Operators

What is the result when one tries to compile and run the following code?

```
public final static void main(String[] args){  
    double d = 10.0 / -0;  
    if(d == Double.POSITIVE_INFINITY)  
        System.out.println("Positive infinity");  
    else  
        System.out.println("Negative infinity");  
}
```

- Positive infinity
- Negative infinity
- Will fail to compile
- Runtime exception

Question - 43 "Syntax Review 1"

SCORE: 5 points

Application Development Java Easy

The following code is in a file called Test.java

```
class Base {  
    public static void main(String[] args){  
        System.out.println("Hello");  
    }  
}  
public class Test extends Base{ }
```

What happens when it is compiled and run?

- It fails to compile.
- It compiles and generates a runtime error.
- It compiles and runs with no output.
- It compiles and prints "Hello".

Question - 1
JSP Implicit Objects

SCORE: 5 points

Consider the following *HttpServlet* class, *TestServlet*, and its corresponding JSP file, *test.jsp*.

TestServlet

```
import javax.servlet.*;
import javax.servlet.http.*;
import java.io.*;

public class TestServlet extends HttpServlet {
    public void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        request.setAttribute("testAttr", "Test Attribute");
        RequestDispatcher view = request.getRequestDispatcher("test.jsp");
        view.forward(request, response);
    }
}
```

test.jsp

```
<%@ page contentType="text/html; charset=UTF-8" language="java" %>
<html>
    <body>
        <!-- Code block -->
    </body>
</html>
```

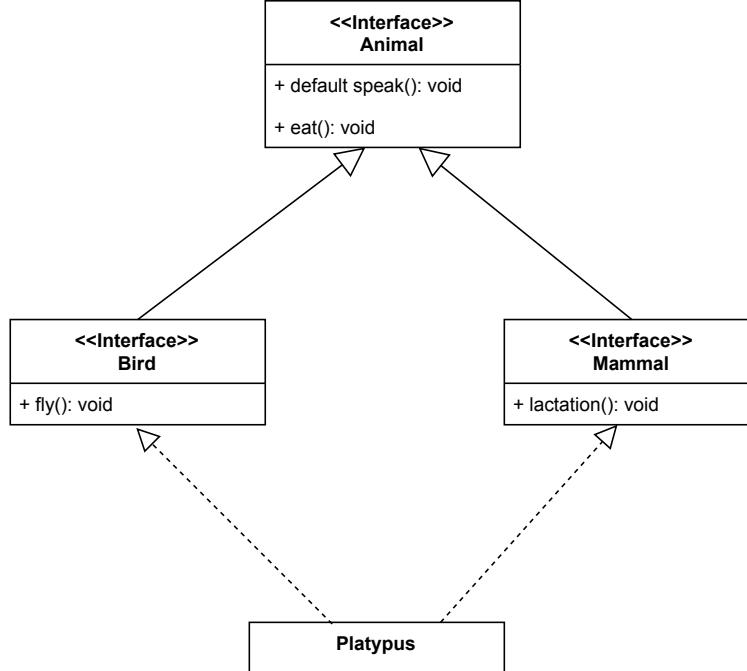
Which of the following code snippets can replace the *Code block* in *test.jsp* to retrieve and print the value of the *testAttr* attribute from the request?

- <%= request.getAttribute("testAttr") %>
- \${pageContext.request.getAttribute("testAttr")}
- <%= application.getAttribute("testAttr") %>
- \${requestScope.testAttr}

Question - 2
Interfaces

SCORE: 5 points

Consider the following diagram



Which of the following statements are true regarding it?

- The Platypus class must implement all the methods.
- The diagram represents a diamond problem.
- The Platypus class only have to implement the eat(), fly(), and lactation() method.
- The Platypus class cannot extend multiple interfaces.

Question - 3

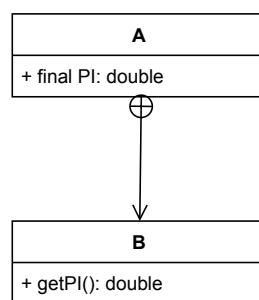
Inner Class, Static and Final

SCORE: 5 points

Medium inner class static final

Consider the following UML class diagram

Note - Class B is *private*.



What is the correct way to access the value of PI through the *getPI()* method in the main?



```

A.B inner = new B();
double piValue = inner.getPI();
System.out.println("The value of PI is: "+piValue);

```

A.B inner = new B(); double piValue = inner.getPI(); System.out.println("The value of PI is: "+piValue);

```
B inner = new B();
double piValue = B.getPI();
System.out.println("The value of PI is: "+piValue);
```

First, class B must be made public then we can use the following code.

```
A outerObj = new A();
A.B innerObj = outerObj.new B();
double piValue = A.B.getPI();
System.out.println("The value of PI is: "+piValue);
```

First, class B should be made public, and PI should also be declared as static then, we can use the following code.

```
A outerObj = new A();
A.B innerObj = outerObj.new B();
double piValue = A.B.getPI();
System.out.println("The value of PI is: "+piValue);
```

```
A outerObj = new A();
A.B innerObj = outerObj.new B(); double piValue = A.B.getPI(); System.out.println("The value of PI is: "+piValue);
```

Question - 4 Polymorphism

SCORE: 5 points

Medium Polymorphism

```
class Parent {
    void print(String text) {
        System.out.println("String: " + text);
    }

    void print(int number) {
        System.out.println("Integer: " + number);
    }
}
class Child extends Parent
{
    void print(int number)
    {
        System.out.println("I am a child" + number);
    }
    void print(float number)
    {
        System.out.println("Float: " + number);
    }
}

public class Main{
    public static void main(String[] args) {
        Parent p = new Parent();
        p.print(5);
        p=new Child();
        p.print(2.3f);
```

```
}
```

Which of the following statements are true regarding this code?

- The code demonstrates only compile-time polymorphism.
- The code will run successfully.
- The code demonstrates both compile-time and run-time polymorphism.
- In the last line, we need downcasting in order to call the print() method with a floating point value.

Question - 5

Java Garbage Collection

SCORE: 5 points

Garbage Collection Medium

Which of the following statements are true about garbage collection in Java?

- The garbage collector can only free memory that was allocated using the new keyword.
- The garbage collector can free memory that is being referenced by a static variable.
- The system.gc() method can be used to guarantee that garbage collection will occur.
- The finalize() method can be used to prevent an object from being garbage collected.

Question - 6

Java Generics

SCORE: 5 points

Generics Medium

What is the result of compiling and/or running this code?

```
public class Generic<T> {  
    private T value;  
    public Generic(T value) {  
        this.value = value;  
    }  
    public T getValue() {  
        return value;  
    }  
}
```

```
import java.util.ArrayList;  
public class Main {  
    public static void main(String args[]) {  
        ArrayList<Generic> g = new ArrayList<>();  
        Generic<?> g1=new Generic<>(10);  
        Generic<?> g2=new Generic<>"Hello";  
        g.add(g1);  
        g.add(g2);  
        int i=g.get(0).getValue();  
        String s=g.get(1).getValue();  
    }  
}
```

```
        System.out.println(s);
        System.out.println(i);
    }
}
```

- Compile-time error while retrieving the values from array list and assigning them to their respective datatypes.
- Compile-time error while creating the generic object with int value, because generics does not work with primitive data type int
- Hello 10
- Run-time error because an array list cannot contain generic objects of different types (string and int)

Question - 7 Empty Collection

SCORE: 5 points

Java Collections Queue Medium Stacks

Which code displays an empty ([]) collection when executed?



```
Stack<Integer> stack = new Stack<>();
Queue queue = new LinkedList();

for (int i = 0; i < 10; i++)
    stack.add(i);

for (int i = 0; i < stack.size() - 1; i++) {
    int n = stack.remove(0);
    queue.add(n);
}

for (int i = 0; i < queue.size() - 1; i++) {
    int n = (int) queue.remove();
    i = i - 1;
}

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



```
Stack<Integer> stack = new Stack<>();
Queue queue = new LinkedList();

for (int i = 0; i < 10; i++)
    stack.add(i);

for (int i = 0; i < stack.size(); i++) {
    int n = stack.remove(0);
    queue.add(n);
}

for (int i = 0; i < queue.size(); i++) {
    int n = (int) queue.remove();
}

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

```
Stack<Integer> stack = new Stack<>();
Queue queue = new LinkedList();

for (int i = 0; i < 10; i++)
    stack.add(i);

for (int i = 0; i < stack.size(); i++) {
    int n = stack.remove(0);
    queue.add(n);
    i = i - 1;
}

for (int i = 0; i < queue.size(); i++) {
    int n = (int) queue.remove();
}

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

```
Stack<Integer> stack = new Stack<>();
Queue queue = new LinkedList();

for (int i = 0; i < 10; i++)
    stack.add(i);

for (int i = 0; i < stack.size(); i++) {
    int n = stack.remove(0);
    queue.add(n);
    i = i - 1;
}

for (int i = 0; i < queue.size(); i++) {
    int n = (int) queue.remove();
    i = i - 1;
}

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

Question - 8

Java Streams

SCORE: 5 points

Java Medium Stream

Consider the following code

```
class Weather
{
    String place;
    Double temperature;

    public Weather()
    {

    }

    public Weather(String place, Double temperature)
    {
```

```

        this.place = place;
        this.temperature = temperature;
    }

    public Double getTemperature()
    {
        return temperature;
    }

    public String getPlace()
    {
        return place;
    }

    public String toString()
    {
        return new StringBuffer(" Place : ")
            .append(this.place)
            .append(" Temperature : ")
            .append(this.temperature)
            .toString();
    }
}

```

```

List<Weather> weathers = new ArrayList<>();
weathers.add(new Weather("Sunny", 33.0));
weathers.add(new Weather("Rainy", 17.0));
weathers.add(new Weather("Cloudy", 23.0));
weathers.add(new Weather("Cold", 3.0));
weathers.add(new Weather("Hot", 37.0));
weathers.add(new Weather("Windy", 13.0));
weathers.add(new Weather("Snowy", 0.0));
weathers.add(new Weather("Freezing", -15.0));

// sort & print code block

```

Which of the following options will display the output after sorting the objects by temperature?

- weathers.stream() .map(Weather::getTemperature) .sorted() .forEach(System.out::println);
- weathers.stream() .sorted(Weather::getTemperature) .forEach(System.out::println);
- weathers.stream() .sorted((p1, p2) -> p1.getTemperature().compareTo(p2.getTemperature()))
 .forEach(System.out::println);
- weathers.stream() .map(Weather::getTemperature) .sorted((p1, p2) -> p1.compareTo(p2))
 .forEach(System.out::println);

Question - 9 Find the Output

SCORE: 5 points

Java Java 8 Stream Medium

Consider the following code:

```

int sum  = Stream.iterate(new int[]{0, 1},
tint sum  = Stream.iterate(new int[]{0, 1}, x -> new int[]{x[1], x[0] + x[1]})
    .limit(n)
    .map(x -> x[0])
    .collect(toList())
    .stream()
    .distinct()

```

```
.filter(i -> i % 2 == 0)
.mapToInt(i->i)
.sum();

return sum;
```

What is the difference in results for $n=7$ and $n=8$?

- 2
- 4
- 8
- 0
- 11

Question - 10

SCORE: 5 points

Console Output

Medium Java Java 8 Stream Functions

What is the output of this code?

```
Function<List<Integer>, Integer> function = x -> x
    .stream()
    .map(i-> i * 2)
    .mapToInt(i->i)
    .distinct()
    .sum();

Function<Integer, Integer> function2 = x -> x * 10;
Function<Integer, Integer> function3 = x -> x * 100;

int len = function.andThen(function2)
    .andThen(function3)
    .apply((Arrays.asList(1,2,2)));
System.out.println(len);
```

- 600
- 60000
- 3000
- 6000

Question - 11

SCORE: 5 points

Best Three Scores

Java Java 8 Stream Medium

```
int [] scores = {1,3,8,3,5,6,2,4}
```

Which code returns the largest three numbers from the `scores` array?

- List<Integer>bestScore = Arrays.stream(scores).boxed().sorted().skip(5).collect(Collectors.toList());
- List<Integer>bestScore = Arrays.stream(scores).boxed().sorted().skip(3).collect(Collectors.toList());
- List<Integer>bestScore = Arrays.stream(scores).sorted().skip(5).collect(Collectors.toList());
- List<Integer>bestScore = IntStream.of(scores).sorted().boxed().skip(4).collect(Collectors.toList());

Question - 12

SCORE: 5 points

Even Numbers

Java 8 Java Stream Medium

The following set of operations is performed on an array.

1. Select even numbers
2. Multiply each of them by 2
3. Subtract 1 from each
4. Select all the numbers that are greater than 4

Which of the following code blocks represents these operations?



```
Collection<Integer>c = Arrays.asList(1,2,3,4,5);
List<Integer> list = c.stream() .filter(i -> i % 2 == 0) .map(i -> i -
1)
.filter(i -> i > 4) .collect(Collectors.toList());
```



```
Collection<Integer>c = Arrays.asList(1,2,3,4,5);
List<Integer> list = c.stream() .filter(i -> i % 2 == 0).map(i -> i = i * 2-1)
.filter(i -> i > 4) .collect(Collectors.toList());
```



```
Collection<Integer>c = Arrays.asList(1,2,3,4,5);
List<Integer> list = c.stream() .filter(i -> i % 2 == 0).filter(i -> i = i * 2-1)
.filter(i -> i > 4) .collect(Collectors.toList());
```



```
Collection<Integer>c = Arrays.asList(1,2,3,4,5);
List<Integer> list = c.stream() .filter(i -> i % 2 == 0).filter(i -> i = i * 2-1)
.map(i -> i > 4) .collect(Collectors.toList());
```

Question - 13

SCORE: 5 points

Java : Collections

Medium Java Collections Arrays Vectors Language Proficiency Problem Solving

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

- 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 does not

Question - 14

SCORE: 5 points

Identify Runtime Exceptions

Java Exception Handling Programming Medium

Which of the following is **not** an example of RuntimeException ?

- NullPointerException
- ArrayIndexOutOfBoundsException
- FileNotFoundException

Question - 15

SCORE: 5 points

Empty a HashMap

Java Collections Hash Map Medium

To delete all pairs of keys and values in a given HashMap, which of the following methods should be used ?

- clearAll()
- empty()
- remove()
- clear()

Question - 16

SCORE: 5 points

The Keyword Synchronized

Java Synchronization Medium

The keyword synchronized can be used in which of the following types of blocks:

- Instance methods
- Static methods
- Static classes
- Code blocks inside static methods

Question - 17

SCORE: 5 points

Java : OOPS

[Java](#) [Overloading](#) [OOPS](#) [Polymorphism](#) [Language Proficiency](#) [Problem Solving](#) [Programming](#) [Medium](#)

What feature allows different methods to have the same name and arguments type, but a different implementation is called?

- overloading
- overriding
- Java does not permit methods with same name and type signature
- None of the above

Question - 18

SCORE: 5 points

Which of the following is true about iterators ?

[Java](#) [Collections](#) [Medium](#)

Which of the following is true about iterators ?

- Iterator is an interface
- Iterator is a member function of a class in the library
- Iterators are used to traverse through the elements of a collection
- Iterator is an abstract class used for iterating all the elements of the class

Question - 19

SCORE: 5 points

Java Classes

[Medium](#) [Java](#) [OOPS](#) [Programming](#)

Which statement is true?

- Non-static member classes must have either default or public accessibility.

- All nested classes can declare static member classes.
- Methods in all nested classes can be declared static.
- Static member classes can contain non-static methods.

Question - 20

SCORE: 5 points

Which of the following are true about the Error and Exception classes?

Application Development

Java

Easy

Which of the following are true about the Error and Exception classes?

- Both classes extend Throwable.
- The Error class is final and the Exception class is not.
- The Exception class is final and the Error is not.
- Only the Exception class extends Throwable

Question - 1
Mocking Beans

SCORE: 5 points

Spring Test **Easy** **Mockito** **Spring Mocking**Given the following implementation of *DataService* which uses *ApiClient* component to call external APIs:

```
@Component
public class ApiClient {
    public void call() {
        //not relevant code
    }
}

@Service
public class DataService {
    @Autowired
    private ApiClient apiClient;
    public void collectData() {
        apiClient.call();
    }
}
```

The requirement is to implement the test and don't call external API during the test execution. The following code has been implemented:

```
@SpringBootTest
class DataServiceTest {
    <CODE HERE>
    @Autowired
    DataService dataService;
    @Test
    void collectData() {
        dataService.collectData();
        //test code
    }
}
```

What should be inserted instead of <CODE HERE> to achieve the goal?

- @Mock ApiClient apiClient; @InjectMocks
- @InjectMocks
- @MockBean ApiClient apiClient;
- @Captor ApiClient apiClient;
- @SpyBean ApiClient apiClient;

Question - 2
Secure Method

SCORE: 5 points

Spring Expression Language **spring security** **Easy**

Given the following controller method, assume that `usersService` is correctly implemented and autowired.

```
<CODE_HERE>
@GetMapping("/users/{id}")
public ResponseEntity<UserResponse> get(@PathVariable @NotNull UUID id) {
    return ResponseEntity.ok(usersService.get(id));
}
```

The requirement is to make sure that only users with any of `ROLE_ADMIN` or `ROLE_USER_MANAGER` roles assigned will be able to execute this method. What can be put in place of '`<CODE_HERE>`' to implement this requirement using Spring Security?

- `@PostAuthorize("hasRole('ROLE_ADMIN') or hasRole('ROLE_USER_MANAGER')")`
- `@PreAuthorize("hasAnyRole('ROLE_ADMIN','ROLE_USER_MANAGER')")`
- `@Secured("hasRole('ROLE_ADMIN') or hasRole('ROLE_USER_MANAGER')")`
- `@PreAuthorize("hasRole('ROLE_ADMIN') and hasRole('ROLE_USER_MANAGER')")`

Question - 3 Transactional Tests

SCORE: 5 points

[Spring Test](#) [Easy](#) [transaction management](#)

Given the following test code, which of the statements is true?

```
@ExtendWith(SpringExtension.class)
@Transactional
@ContextConfiguration
class UserRepositoryTest {
    @Test
    @Commit
    void test1() {
        /* non relevant code */
    }
    @Test
    @Rollback(false)
    void test2() {
        /* non relevant code */
    }
}
```

- Only the transaction for method `test1()` will be committed.
- Only the transaction for method `test2()` will be committed.
- Transactions for both methods will be committed.
- `@Transactional` will lead to a runtime error when running the tests.

Question - 4 Postgres Specific Service

SCORE: 5 points

[Starter Parent](#) [Spring Configuration](#) [Easy](#)

The requirement is to implement a Spring Boot `@Service` that should be loaded to the spring context only if the `org.postgresql.Driver` class is present on the classpath, and the `application.properties` file contains the property `database.vendor=postgres`.

```
<CODE HERE>
@Service
public class PostgresSpecificService {
    /* not relevant code*/
}
```

Which of the following annotation options can replace `<CODE HERE>` to achieve this?

- `@ConditionalOnProperty(name = "database.vendor", value = "postgres") @ConditionalOnClass(name = "org.postgresql.Driver")`
- `@ConditionalOnProperty(prefix = "database", name = "vendor", havingValue = "postgres") @ConditionalOnClass(name = "org.postgresql.Driver")`
- `@ConditionalOnProperty(name = "database.vendor", havingValue = "postgres") @ConditionalOnMissingBean(org.postgresql.Driver.class)`
- `@ConditionalOnProperty(prefix = "database", name = "vendor", havingValue = "postgres") @ConditionalOnBean(name = "org.postgresql.Driver")`
- None of the above

Question - 5

Bean Scopes

SCORE: 5 points

[Starter Parent](#) [Easy](#) [Spring Scope](#)

Consider the following code.

```
<CODE HERE>
public class Processor {
    public void process() {
        /* not relevant code */
    }
}

@RestController
public class ProcessController {
    @Autowired
    private Processor processor;
    @GetMapping("/process")
    public void process() {
        processor.process();
    }
}
```

What should be inserted in place of `<CODE HERE>` to have a new instance of processor created every time the `/process` endpoint is called?

- `@Scope("prototype") @Component`
- `@Prototype`
- `@Component @Scope(scopeName = "prototype", proxyMode= ScopedProxyMode.TARGET_CLASS)`
- `@Component(`autowireCandidate=true`)`
- `@Service(alwaysNew=true)`

Spring Spring Boot Easy

Consider the following code.

Circular.java

```
package spring.circular;

public interface Circular {
    void doCircularThings();
}
```

CircularBeanA.java

```
package spring.circular;
import org.springframework.stereotype.Component;
import javax.annotation.PostConstruct;

//X
@Component
public class CircularBeanA implements Circular {
    private Circular circularBeanB;

    public CircularBeanA(
        //Y
        Circular circularBeanB) {
        this.circularBeanB = circularBeanB;
    }

    @Override
    public void doCircularThings() {
        System.out.println("CircularBeanA: did bad things");
    }

    @PostConstruct
    private void init() {
        System.out.println("CircularBeanA: initialized");
    }
}
```

CircularBeanB.java

```
package spring.circular;

import org.springframework.context.annotation.Lazy;
import org.springframework.stereotype.Component;
import javax.annotation.PostConstruct;

@Component
public class CircularBeanB implements Circular {
    private Circular circularBeanA;

    public CircularBeanB(
        @Lazy
        //Z
        Circular circularBeanA) {
```

```

        this.circularBeanA = circularBeanA;
    }

@Override
public void doCircularThings() {

}

@PostConstruct
public void init() {
    System.out.println("CircularBeanB: initialized");
    circularBeanA.doCircularThings();
}
}

```

Which of the following options are true regarding this code?

- The application runs successfully and it'll output
CircularBeanA: initialized
CircularBeanB: initialized
CircularBeanA: did bad things
- The application won't run.
The code doesn't compile.
- The application runs but it will throw `NoUniqueBeanDefinitionException` and it will exit.
- If @Qualifier("circularBeanA") annotation is put on Z and @Qualifier("circularBeanB") put on Y, the application will not throw BeanCurrentlyInCreationException and runs successfully.
- The application runs and it will write
CircularBeanB: initialized into console then
it will throw org.springframework.beans.factory.BeanCurrentlyInCreationException.
- If @PostConstruct annotation is removed in CircularBeanB, it will run successfully and will print
CircularBeanA: initialized into console
- if @Primary annotation is put in X place, it will run successfully.

Question - 7

Spring AOP Usage

SCORE: 5 points

Spring Spring Boot Easy

Consider the following code.

NotifierMetricLogger.java

```

package spring.listener;

import org.aspectj.lang.annotation.Around;
import org.aspectj.lang.annotation.Aspect;
import org.aspectj.lang.annotation.Before;
import org.aspectj.lang.annotation.AdviceName;
import org.springframework.stereotype.Component;
import org.aspectj.lang.JoinPoint;
import org.aspectj.lang.ProceedingJoinPoint;
import java.util.logging.Logger;

//X
@Component
public class NotifierMetricLogger {
    private static final Logger log = Logger.getLogger(NotifierAspect.class.getName());
    //Y
    public Object beforeNotifyLogging(ProceedingJoinPoint joinPoint) throws Throwable {

```

```

        long startDate = System.currentTimeMillis();
        Object proceed = joinPoint.proceed();
        long executionTime = System.currentTimeMillis() - startDate;
        log.info("Notify process time :" + executionTime);
        return proceed;
    }
}

```

TwitterNotifier.java

```

package spring.service.impl;

import spring.service.Notifier;
import org.springframework.stereotype.Component;
import java.util.logging.Logger;

@Component
public class TwitterNotifier implements Notifier {
    private static final Logger log = Logger.getLogger(TwitterNotifier.class.getName());
    @Override
    public void notify(String message) {
        log.info("TwitterNotifier: " + message);
        //send notification to home page
    }
}

```

Notifier.java

```

package spring.service;

public interface Notifier {
    void notify(String message);
}

```

Assuming the Spring Boot application is configured to use AOP with `@EnableAspectJAutoProxy(proxyTargetClass = true)` annotation, to capture `TwitterNotifier.notify(String message)` method's process time, which of the following options should be placed in the X and Y positions in `NotifierMetricLogger.java`?

- X = `@Aspect`
Y = `@Before("execution(* spring.service.impl.*.notify(..))")`
- X = `@AdviceName("NotifierMetricLogger")`
Y = `@Around("execution(* spring.service.impl.*.notify(..))")`
- X = `@AdviceName("NotifierMetricLogger")`
Y = `@Before("execution(* spring.service.impl.*.notify(..))")`
- X = `@Aspect`
Y = `@Around("execution(* spring.service.Notifier.notify(..))")`

Question - 8

Bean definition enhancement

SCORE: 5 points

[Spring Boot](#) [Starter Parent](#) [Easy](#)

During the startup of a Spring Boot application, it needs to read bean configuration metadata and change it before the container instantiates any beans.

How can this be achieved in an efficient and scalable way?

- Implement BeanPostProcessor.
- Implement BeanFactoryPostProcessor.
- It is not possible to change beans metadata on runtime. All beans metadata is defined at compile time.
- Implement Aspect.

Question - 9

Behavior Inheritance

SCORE: 5 points

Spring Boot Starter Parent Easy

A Spring Boot application has the following hierarchy of classes.

```
public class Animal {  
    @PostConstruct  
    private void init() {  
        System.out.println("Animal init");  
    }  
}  
  
@Component  
public class Cat extends Animal{  
    @PostConstruct  
    public void init() {  
        System.out.println("Cat init");  
    }  
}  
  
@Lazy  
@Component  
public class Dog extends Animal{  
    @PostConstruct  
    public void init() {  
        System.out.println("Dog init");  
    }  
}
```

What is the output?

- IllegalBeanDefinitionException: @PostConstruct should be applied to a public method
- Cat init Dog init
- Animal init Cat init
- Animal init Cat init Animal init Dog init
- Animal init Cat init Dog init or Animal init Dog init Cat init

Question - 10

Multiple Beans Definition

SCORE: 5 points

Spring Spring Boot Dependency Management Easy

A Spring application has an interface called *Server*, and two implementations: *ServerA* and *ServerB*. There is a class, *ServerManager*, that uses the *Server* bean as a dependency.

```
public interface Server {  
}  
  
@Service  
public class ServerA implements Server {  
}  
  
@Service  
public class ServerB extends ServerA {  
}  
  
@Service  
public class ServerManager {  
    @Autowired  
    Server server;  
}
```

Which of the following statements is true about this code?

- The code throws `InterfaceNotInstantiableException`.
- The code runs fine. A random Server implementation is injected into the `server` field.
- The code throws `NoUniqueBeanDefinitionException`.
- The code does not compile.

Question - 11

Testing a Spring Application

SCORE: 5 points

[Spring](#) [Spring Boot](#) [Spring Test](#) [Easy](#)

There is a Spring boot web application that uses a relational database for data storage. The *org.springframework.boot:spring-boot-starter-data-jdbc* starter is used in the implementation of the data access layer. Now tests are needed that cover the functionality of the data layer in isolation.

What Spring test annotation is recommended when constructing the test context?

- `@DataJpaTest`
- `@DataJdbcTest`
- `@SpringBootTest`
- `@WebMvcTest`

Question - 12

Path Variable

SCORE: 5 points

[Spring](#) [Spring Boot](#) [Spring MVC](#) [Easy](#)

In the Spring MVC controller, which of these are valid uses of the @PathVariable annotation?

- `@RequestMapping(value="/users/{userId}/addresses/{addressId}") public String viewUserAddress(@PathVariable String userId, @PathVariable String addressId, Model m)`
- `@RequestMapping(value="/users/{userId}") public String viewUser(@PathVariable("users") String user, Model m)`
- `@RequestMapping(value="/users/{userId}") public String viewUser(@PathVariable String userId, Model m)`
- `@RequestMapping(value="/users/{userId}") public String viewUser(@PathVariable("userId") String personnelId, Model m)`

Question - 13 Component Dependency

SCORE: 5 points

Spring Spring Boot Configuration Easy

The following @Configuration contains definitions for 2 beans: ServiceA and ServiceB. Imports are omitted.

```
@Configuration
public class ServiceConfiguration {
    @Bean
    public ServiceA serviceA(ServiceB serviceB) {
        return new ServiceA(serviceB);
    }
    @Bean
    public ServiceB serviceB(ServiceC serviceC) {
        return new ServiceB(serviceC);
    }
    @Bean
    public ServiceC serviceC(ServiceA serviceA) {
        return new ServiceC(serviceA);
    }
}
```

Which of the following statements is true?

- This code does not compile.
- This code runs fine and creates 3 Beans: `ServiceA`, `ServiceB` and `ServiceC`.
- The code throws `BeanCurrentlyInCreationException` when run.
- The code throws `StackOverflowError` when run.

Question - 14 Application Properties Override

SCORE: 5 points

Spring Boot Application Properties Easy

In the classpath of a Spring Boot application, there are 2 files with properties `application.properties` and `application-prod.properties`. It is required to always load properties from `application.properties` and override with values in the `application-prod.properties` file only when the application is deployed on the production server.

What should the value of the environment be to achieve this on the production server?

- spring.properties=application-prod.properties
- spring.profiles.active=application-prod
- spring.profiles.active=prod
- environment=prod

Question - 15

Spring Dependency Injection

SCORE: 5 points

Spring

Easy

```
@Service
public ProductService {
    private ProductRepository productRepository;
    private ProductMapper productMapper;

    @Autowired
    public ProductService(ProductRepository productRepository,
                          ProductMapper productMapper) {
        this.productRepository = productRepository;
        this.productMapper = productMapper;
    }

}
```

Which type of injection is implemented in the ProductService?

- Setter
- Getter
- Property
- Construction

Question - 16

Create a User Controller

SCORE: 5 points

Spring Boot

Spring MVC

Easy

An *HTTP POST* endpoint accepts a JSON representation of a *User* object. It uses the following *User* and *UserController* classes.

```
public class User {
    @NotEmpty
    private String name;
    @NotEmpty
    private String surname;
}

@RestController
public class UserController {

    @PostMapping("/users")
    public void create(@RequestBody User user) {
        System.out.println("name: " + user.getName() + " surname: " + user.getSurname());
    }
}
```

```
}
```

What is the result of a call with the payload below?

```
{
  "name": "Duke",
  "surname": null
}
```

- BAD REQUEST 400 and a message that `user.surname` is validated by @NotEmpty annotation.
- OK 200 and prints 'name: Duke surname: null'
- SERVER ERROR 500 because of a NullPointerException during validation of `null` string for @NotEmpty
- OK 200 and prints 'name: Duke surname:'

Question - 17

Query Annotation

SCORE: 5 points

Spring Boot Easy

Which of the following annotations can be used for a specific custom query in a Spring data JPA repository method?

- @JpaQuery
- @SqlQuery
- @DataQuery
- @Query

Question - 18

Property Value Injection

SCORE: 5 points

Spring Boot Easy

Which of the following annotations can be used to inject property values into Spring Boot beans and configuration classes?

- @Values
- @Property
- @Inject
- @Value

Question - 19

Dependency Injection

SCORE: 5 points

Which of the following options can be used for dependency injection in Spring Boot?

- Setter injection
- jsonConfiguration
- Constructor injection
- @Autowired

Question - 20

Endpoints

SCORE: 5 points

Which Spring-based code snippet must fill the blank such that Actuator security rules are present, and all endpoints fetch for actuator?

```
@Bean
public PrivacyChain demoChain(ServerHttpSecurity http) {
    return http.authorizeExchange()
        .pathMatchers("____").permitAll()
        .and().build();
}
```

- /actuators/**
- /actuators.**
- /actuator/**
- /actuator/info/**

Question - 21

Actuator

SCORE: 5 points

A dependency has been added to pom.xml in a Spring application as follows.

```
<dependency>
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter-actuator</artifactId>
</dependency>
```

What is the starter used for?

- application analysis
- creation of an application
- automation of an application
- production of application instances

Question - 22

SCORE: 5 points

Validator

Spring Boot Easy

In a RESTful application using Spring, which of the following is not used to create an object validator?

- @Min(value = 1)
 @Max(999999)
 private int id;
- @Size(limit = 100)
 private String name;
- @NotNull
 private Boolean isActive;
- @ValidCategory(categoryType="sample")
 private String category;

Question - 23

SCORE: 5 points

Rest Handle

Spring Boot Easy

When building a Spring-based RESTful application, a new resource must be created with the request URI of "/handle". Which of the following code segments is most appropriate?

- @RestController
 public class demoHandler {
 private static Map<String, Product> dataRepo = new HashMap<>();
 @RequestMapping(value = "/handle", method = RequestMethod.POST)
 public ResponseEntity<Object> createProduct(@RequestBody Product product) {

 }
 }

@RestController
public class demoHandler {
 private static Map<String, Product> dataRepo = new HashMap<>();
 @RequestMapping(value = "/handle", method = RequestMethod.DELETE)
 public ResponseEntity<Object> createProduct(@RequestBody Product product) {

 }
}

@RestController
public class demoHandler {
 private static Map<String, Product> dataRepo = new HashMap<>();
 @RequestMapping(value = "/handle", method = RequestMethod.CREATE)
 public ResponseEntity<Object> createProduct(@RequestBody Product product) {

 }
}

@RestController
public class demoHandler {
 private static Map<String, Product> dataRepo = new HashMap<>();
 @RequestMapping(value = "/handle", method = RequestMethod.GET)
 public ResponseEntity<Object> createProduct(@RequestBody Product product) {

 }
}

Question - 24 Classes Segment

SCORE: 5 points

Spring Boot Easy

A Spring application has four classes. Select the option which would contain the business logic.

- @Service public class A{ .. }
- @Repository public class A{ .. }
- @Primary public class A{ .. }
- @Session public class A{ .. }

Question - 25 Mechanism

SCORE: 5 points

Spring Boot Easy

Which annotation should be used instead of <<blank>> that will allow one to use the class for data storage, update, and retrieval?

```
<<blank>>
public class DemoSession implements DemoInterface{

    @Override
    public void save(Student student) {
        ....
    }
}
```

- @Service
- @Repository
- @Session
- @Autowired

Question - 26 Spring Annotation

SCORE: 5 points

Spring Boot | Easy

What does the annotation in this Spring-based code segment do?

```
@Component
public class ComponentExample {
    int x;
    public void show(){
        System.out.println("Hello");
    }
}
```

- It allows Spring to create containers.
- It allows Spring to create components.
- It allows Spring to collect bean instances.
- It allows Spring to detect custom beans automatically.

Question - 27 Employee

SCORE: 5 points

Spring Boot | Easy

In the following Spring Boot code, what kind of dependency is injected by the annotation?

```
public class Employee {

    @Autowired
```

```
private Roll roll;  
  
Employee() {  
}  
}
```

- constructor based
- setter bean
- field based
- Spring IOC

Question - 28

Book

SCORE: 5 points

Easy Spring Boot

```
@Entity  
public class Book {  
  
    @Id  
    Long id;  
    String author;  
    String year;  
    ....  
}
```

For this model, which option is a valid derived query method for its corresponding JpaRepository?

- findAuthorById
- findByAuthor
- findByAuthorAndIdAndYear
- findBook

Question - 29

FooBar

SCORE: 5 points

Easy Spring Boot

Which link will hit the following method, where the application context is '/home'?

```
@RequestMapping(value = {"/ex/basic/bar", "/ex/basic/foo"}, method = RequestMethod.GET)  
public String getPath() {  
    return "FooBar";  
}
```

- "GET request http://localhost:8080/home/ex/basic/bar"
- "GET request http://localhost:8080/home/ex/basic"
- "POST Request http://localhost:8080/home/ex/basic/bar"
- Two routes cannot be mapped to one resource.

Question - 30

RESTful

SCORE: 5 points

Easy **Spring Boot**

In Spring's approach to building RESTful web services, how are the HTTP requests handled?

- They are handled by a controller and identified by the @RestController annotation.
- They are handled by an object.
- They are handled by a class.
- They are handled by a controller and identified by the @GreetingController annotation.

Question - 31

Microservices Security

SCORE: 5 points

Microservices **Easy**

A company deals has implemented the GPT-3 AI Text Generation using microservices infrastructure for handling thousands of users. The operations team receives a notification that three of their services are down. There is evidence of image pullback failure. Upon investigating, they deduced that one of their services was internet facing and was exploited. The exploited service started messaging other services with corrupted data. The team applied security patches to fix the problem.

What is the fix?

- The team added mTLS and added rules for inter-service communications. After that, they pushed the internet-facing server behind a load balancer and applied JWT tokens for authentication.
- The team cut off the internet-facing service from the infrastructure and applied a JWT token for each call to other services.
- A and B

Question - 32

Microservices Reliability

SCORE: 5 points

Microservices **Medium**

A chat-based app like Whatsapp is using microservices to connect thousands of real-time users together. They have a flaw in the design of the microservices that all the reads and writes go through one service, "Service A". Service A provides them a great deal of volatility and unpredictability. The company would

like to refactor the codebase to address the unpredictability of the system.

Which of the following decisions should they go with?

- Separate the read and write APIs into separate services.
- Add a queue to the write API and a cache on the read API so the system can efficiently handle messages.
- Add redundancy to Service A.

Question - 33 Microservices Usage	SCORE: 5 points
--	------------------------

Microservices

Easy

A services-based company is building an AI tooling system that can help their client streamline their training and inference data set using AWS Fargate. However Fargate does not provide GPU access to users, and it is expensive for the client. The team decided to implement a custom solution that can scale and train custom models of users. Given the short time span, they have two options:

1. Build the custom Solution using Microservices, LinkerD, MicroK8s.
2. Use an existing system like KubeFlow and build custom features on top of it.

Which of the following is the best way forward?

- Try 2 then 1.
- Try and test 1.
- Try 1 and then 2.

Question - 34 Microservices Communication	SCORE: 5 points
--	------------------------

System Design

Microservices Architecture

Medium

A microservices-based architecture for an e-commerce platform is in the design phase. A core requirement is to ensure that the system can handle eventual consistency while ensuring that the platform's various services remain loosely coupled. Two services, Order Service and Inventory Service, need to communicate regarding the availability of products.

When a customer places an order, the Order Service needs to check if the product is in stock using the Inventory Service. However, the design must ensure that even if the Inventory Service is temporarily unavailable, the Order Service can still accept orders, albeit with some potential delay in processing.

Which of the following communication patterns is most suitable to ensure that the services remain decoupled and the system handles eventual consistency?

- Synchronous HTTP REST API calls from Order Service to Inventory Service
- RPC calls from Order Service to Inventory Service using a protocol like gRPC.
- Order Service writes to a shared database which Inventory Service polls periodically.
- Order Service publishes an event (like "OrderPlaced") to a message queue, and Inventory Service subscribes to these events.

Question - 35	SCORE: 5 points
----------------------	------------------------

Microservices Easy

A streaming service giant uses microservices architecture in its infrastructure. They want to provide users with a seamless experience so they started load balancing their servers on the client side (frontend). Whenever a server is busy, the client automatically connects to other servers. There is one security flaw: all the server locations and tokens are stored on the client side. How can this problem be mitigated?

- Each service will need to authenticate the requests individually and cannot trust other services.
- Add more layers of authentication and authorization in between the servers/clients
- Add mTLS certificates that expire after 10 minutes.
- B and C

Question - 36

Transactions

SCORE: 5 points

Microservices Easy

A payment gateway company that integrates PayPal, Stripe, and many other vendors uses microservices for their infrastructure. Whenever a user clicks on the payment button, a request to the backend is made and money is instantly deducted. Whenever a user presses the button twice, the charges are deducted twice. How can you fix this problem?

- Disable the button after it is pressed one time.
- Disable the transaction from the backend once it is approved one time.
- Add an idempotence key to the request and add the transaction to the queue.
- A and C
- A and B

Question - 37

Distributed System Characteristics

SCORE: 5 points

Microservices Medium Distributed Systems

Which of the following are advantages of a distributed system?

- If one component fails in a distributed system, the remaining components may be able to continue operating.
- It is less difficult to implement a distributed database system because of its low cost of installation.
- The amount of processing overhead is less than with a monolithic architecture.
- It overcomes bottlenecks of the processing pipeline easier than with a centralized system.

Question - 1

SCORE: 5 points

Spring Data Repository Type
Spring Data
Spring Boot
Medium

Consider the following code.

Admin.java

```
@Entity
@SequenceGenerator(name = "default_gen", sequenceName = "SEQ_ADMIN")
public class Admin {

    @Id
    @GeneratedValue(strategy = GenerationType.SEQUENCE, generator = "default_gen")
    @Column(name = "id")
    private String name;
    private String password;
    private String locale;
    private String email;
    //getter & setters
}
```

Admin Repository.java

```
@Repository
public interface AdminRepository extends X <Admin, Long> {

    Page<Admin> findAllByLocaleOrderByName(String locale, Pageable pageable);
}
```

To run the *findAllByLocaleOrderByName* method with pagination ability, which of the following options can be used in place of *X* in the *AdminRepository* interface?

- CrudRepository
- JpaRepository
- PagingRepository
- PagingAndSortingRepository

Question - 2

SCORE: 5 points

Spring Data Repositories
Spring data
Medium
Spring Data JPA
transaction management

Given the *users* table that contains the following columns,

```
id: integer
name: varchar(50)
```

age: integer

and the following spring data JPA code,

```
@Entity
@Table(name = "users")
public class User {
    @Id
    private int id;
    private String name;
    private String surname;
    private int age;
    //getters and setters
}
```

```
public interface UserRepository extends JpaRepository<User, Integer> {
    //<CODE 1>
    @Query("update User u set u.age = ?2 where u.id = ?1")
    void setAge(int id, int age);
}
```

```
@Service
@Transactional(readOnly = true)
public class UserService {

    @Autowired
    private UserRepository userRepository;
    //<CODE 2>
    public void setUserAge(int id, int age) {
        userRepository.setAge(id, age);
    }
}
```

which of the statements are true?

- `setUserAge` method runs fine and sets user matching `id` age to the specified `age` value.
- `setUserAge` throws `InvalidDataAccessApiUsageException` when executed
- `setUserAge` method runs fine and sets the user matching `id` age to the specified `age` value if `@Transactional(readOnly = false)` is inserted instead of <CODE 2>
- `setUserAge` method runs fine and sets the user matching `id` age to the specified `age` value if `@Modifying` is inserted instead of <CODE 1> and `@Transactional(readOnly = false)` is inserted instead of <CODE 2>
- `setUserAge` method runs fine and sets the user matching `id` age to the specified `age` value if `@Transactional(readOnly = false)` is inserted instead of <CODE 1>

Question - 3 Controller Correct Definition Problem

SCORE: 5 points

[Spring](#) [REST API](#) [Spring MVC](#) [Medium](#)

Given the following controller code, which of the statements are true?

```
@RestController
public class ScoreController {
    @RequestMapping("/myScore/{id}")
    public void myScore(@PathVariable("id") int id, @RequestParam Optional<String> name) {
```

```
}
```

Note: Assume that application is running on <http://localhost:8080>

- The method is fine and http://localhost:8080/myScore/id?name=Adam maps to the method myScore.
- The method is fine, and http://localhost:8080/myScore/1?name=Adam maps to the method myScore.
- The method is fine, and http://localhost:8080/myScore/23?surname=Adamson maps to the method myScore.
- The mapping of the request param is invalid because Optional can't be used for mapping.
- The path param definition is invalid.

Question - 4

SCORE: 5 points

Spring Data Transactional

[Spring](#) [Spring Boot](#) [JPA](#) [Spring Data](#) [Transactional](#) [Medium](#)

Given the following code, what happens when *StudentRepositoryTest* runs?

Lesson.java

```
@Entity
public class Lesson {
    @Id
    private Long id;
    private String name;
    private Integer courseLength;
    private Integer courseLevel;
    @JsonBackReference
    @ManyToOne(fetch = FetchType.LAZY)
    @JoinColumn(name = "student_id")
    private Student student;
    private boolean inProgress;
    //getter & setters
}
```

Student.java

```
@Entity
public class Student {
    @Id
    private Long id;
    private String name;
    private String surname;
    @JsonManagedReference
    @OneToMany(mappedBy = "student", fetch = FetchType.EAGER, cascade = {CascadeType.PERSIST,
    CascadeType.REFRESH})
    private List<Lesson> lessons;
    //getter & setters
}
```

StudentRepository.java

```
@Repository
public interface StudentRepository extends JpaRepository<Student, Long>{
    //Y
```

```
Optional<Student> findById(Long id);  
}
```

LessonRepository.java

```
@Repository  
public interface LessonRepository extends JpaRepository<Lesson, Long> {  
}
```

StudentService.java

```
@Service  
public class StudentService{  
    private StudentRepository studentRepository;  
    public StudentService(StudentRepository studentRepository, LessonRepository lessonRepository) {  
        this.studentRepository = studentRepository;  
        this.lessonRepository = lessonRepository;  
    }  
  
    public void save(Student student) {  
        studentRepository.save(student);  
    }  
  
    //other crud methods  
  
    //X  
    public void deleteStudentWithLessons(Long id) throws SQLException {  
        Student student =  
            studentRepository.findById(id).orElseThrow(() -> new RuntimeException("Student not found"));  
        List<Lesson> lessons = student.getLessons();  
        lessons.stream().forEach(lesson -> lesson.setStudent(null));  
        studentRepository.delete(student);  
  
        boolean inProgress = lessons.stream()  
            .map(Lesson::isInProgress)  
            .filter(progress -> progress == true)  
            .findFirst()  
            .orElseGet(() -> false);  
        if (inProgress) {  
            throw new SQLException("Cannot delete all Lessons. There are lessons in progress state");  
        }  
        lessonRepository.deleteAll(lessons);  
    }  
}
```

StudentRepositoryTest.java

```
@SpringBootTest  
class StudentRepositoryTest {  
    @Autowired  
    StudentRepository studentRepository;  
    @Autowired  
    StudentService studentService;  
    @Autowired  
    LessonRepository lessonRepository;  
    Student student;  
    @BeforeEach  
    public void init() {  
        student = Student.builder().name("Jorn").surname("Deynhoven").build();  
        studentRepository.save(student);  
        lessonRepository.saveAll(List.of(  
            Lesson.builder().name("Music").courseLength(10).student(student).courseLevel(123).build(),  
            Lesson.builder().name("Art").courseLength(20).courseLevel(123).student(student).build(),  
        ));  
    }  
}
```

```

Lesson.builder().name("Trance").courseLength(30).courseLevel(123).student(student).inProgress(true).build()
    );
}
@Test
void deleteStudentWithLessonsTest() throws SQLException {
    studentService.deleteStudentWithLessons(student.getId());
}
}

```

- It will try to delete the student then the DataIntegrityViolationException will be thrown.
- It will delete the student successfully then an SQLException will be thrown with the message "Cannot delete all Lessons. There are lessons in progress state".
- If @Transactional annotation is put in place of X (StudentServer.java), after saving the student and lessons, it will update lessons and remove the student. Then it will throw an SQLException and all database changes will be rolled back.
- It will throw a RuntimeException with the message "Student not found".
- If @Transactional annotation is put in place of X (StudentServer.java), after saving the student and lessons, it will update lessons and remove the student. Then it will throw an SQLException.

Question - 5

Configuration Properties

SCORE: 5 points

[Spring](#) [Spring Boot](#) [Application Properties Annotations](#) [Medium](#)

An *application.properties* file contains the following properties:

```

app.prop1 = value1
app.prop2 = value2

```

You decided to create a class to hold this configuration. To protect it, the class is defined as final.

```

@Configuration
@ConfigurationProperties(prefix = "app")
public final class AppConfigration {
    String prop1;
    String prop2;

    public String getProp1() {
        return prop1;
    }

    public void setProp1(String prop1) {
        this.prop1 = prop1;
    }

    public String getProp2() {
        return prop2;
    }

    public void setProp2(String prop2) {
        this.prop2 = prop2;
    }
}

```

What is the result of running the Spring application with this class?

- The application runs, the configuration bean is created, and the properties are initialized correctly (prop1=value1, prop2=value2).
- The application runs, and a configuration bean is created, but properties are set to null (prop1=null, prop2=null).
- A BeanDefinitionParsingException is thrown because the @Configuration bean cannot be marked as final.
- An IllegalStateException is thrown because the @Configuration bean cannot have an @ConfigurationProperties annotation.
- A NoSuchMethodException is thrown because the @Configuration bean needs a default constructor.

Question - 6

SCORE: 5 points

Spring Bean Initialization

Java Spring Medium Exception Handling

What will be the output of the following code?

Vehicle.java

```
public class Vehicle
{
    public String name;

    public String getName()
    {
        return name;
    }

    public void setName(String name)
    {
        this.name = name;
    }
}
```

BeanConfiguration.java

```
@Configuration
public class BeanConfiguration
{
    @Bean
    Vehicle vehicle1()
    {
        var veh = new Vehicle();
        veh.setName("Honda");
        return veh;
    }

    @Bean
    Vehicle vehicle2()
    {
        var veh2 = new Vehicle();
        veh2.setName("Volvo");
        return veh2;
    }
}
```

Example.java

```

@Component
@Slf4j
public class Example implements CommandLineRunner
{
    @Override
    public void run(String... args) throws Exception
    {
        var context = new AnnotationConfigApplicationContext(BeanConfiguration.class);
        Vehicle vehicle = context.getBean(Vehicle.class);
        log.info("Vehicle name: {}", vehicle.getName());
    }
}

```

- Volvo
- Honda
- Honda
Volvo
- throws org.springframework.beans.factory.NoUniqueBeanDefinitionException on runtime

Question - 7

Spring Transactional

SCORE: 5 points

Spring Spring Boot Medium

```

@Transactional(propagation= Propagation.REQUIRED)
public void saveProduct(Product product) {
    productService.save(product);
    try{
        saveProductToLogService(product);
    }catch (Exception ex){
        log(ExceptionUtils.getStackTrace(ex));
    }
}
@Transactional(propagation=Propagation.REQUIRES_NEW)
public void saveProductToLogService(Product account) {
    productLogService.save(product);
}

```

Which of the following options describes the given code functionality with @Transactional annotation?

- saveProductToLogService will use the saveProduct's transaction to save the product.
- saveProductToLogService will use a new transaction for productLogService.save method.
- As soon as saveProduct method execution is done, saveProductToLogService.save method execution will be reflected to saveProductToLogService database.
- None of the above

Question - 8

Spring MVC RestController

SCORE: 5 points

```

@RestController
@RequestMapping("/api/product/categories")
public class ProductCategoryController{
    @Autowired
    private CategoryService categoryService;

    @GetMapping("/{id}/{locale}")
    public ResponseEntity<CategoryDto> getByIdAndLocale(@PathVariable("id") Long id,
                                                          @PathVariable("locale") String locale {
        CategoryDto dto = categoryService.getByIdAndLocale(id, locale);
        return new ResponseEntity<>(dto, HttpStatus.OK);
    }
}

```

Which of the following options are true about the given controller method?

- getByIdAndLocale endpoint can return the response in JSON format
- getByIdAndLocale endpoint does not accept GET request
- getByIdAndLocale endpoint does not accept POST request
- getByIdAndLocale endpoint is not accessible without providing id and locale variables

Question - 9

Spring Data Repository

SCORE: 5 points

To use Spring data repositories within another jar module and to use them in a Spring Boot application, what annotation should be used in Spring Boot configuration/ SpringBootApplication classes?

- @EnableJpaRepositories(basePackages = {repositoryPackageOfJarModule})
- @EnableRepositories(basePackages = {repositoryPackageOfJarModule})
- @EnableEntities(basePackages = {repositoryPackageOfJarModule})
- @EnableHibernateRepositories(basePackages = {repositoryPackageOfJarModule})

Question - 10

Spring IOC Container

SCORE: 5 points

Which of the following options act as a Spring IOC Container?

- ApplicationContext
- DispatcherServlet
- SpringRunner

BeanFactory None of the above

Question - 11 Dispatcher Servlet

SCORE: 5 points

 Spring Boot Medium

What is the purpose of Dispatcher Servlet in Spring Boot ?

- It is used for transaction management.
- It is used for database connection pool management.
- It is used to handle all HTTP requests and responses.
- It is used heavily for dependency injection.

Question - 12 Spring Scopes

SCORE: 5 points

 Medium Spring

Which of the following statements is/are true about @Scope("request") and @Scope("prototype") annotations?

- Both are used to define the scope of spring beans.
- @Scope("request") creates a bean instance for a single HTTP request.
- @RequestScope can be used instead of @Scope("request").
- @Scope("prototype") will return a different instance every time it is requested from the container.

Question - 13 Endpoint Security

SCORE: 5 points

 Spring Boot Medium

In Spring Boot Security, the option to enable secure endpoints with @PreAuthorize annotation is:

- Configuration class annotated with @EnableGlobalMethodSecurity
- Configuration class annotated with @EnableGlobalMethodSecurity(securedEnabled = true)
- Configuration class annotated with @EnableGlobalMethodSecurity(prePostEnabled = true)
- None above

Question - 14 API

SCORE: 5 points

What is the console output when the following API is executed?

application.properties

```
logging.level.root=DEBUG
```

```
@GetMapping("/demo")
public String demo() {
    LOG.debug("ERROR log");
    LOG.trace("DEBUG log");
    LOG.info("TRACE log");
    LOG.error("INFO log");

    someRandomClass.longOperation();

    return "Log demo";
}
```

- ERROR log
DEBUG log
TRACE log
INFO log
- ERROR log
TRACE log
INFO log
- ERROR log
DEBUG log
INFO log
- DEBUG log
TRACE log
INFO log

Question - 15 Predict the Output

SCORE: 5 points

Consider the following Snippet and predict the output.

The following API is triggered: <http://localhost:8080/add/employee?eId=123&fName=Ravi&lastName=Shekhar>

```
@Autowired
private EService eService;

@RequestMapping(value = "/add/employee", method = RequestMethod.GET)
public com.model.Employee add(@RequestParam("eId") String eId, @RequestParam("fName") String fName,
@RequestParam("lastName") String lastName)
{
```

```

        return eService.createEmployee(eId, fName, lastName);
    }

@Aspect
@Component
public class EServiceAspect
{
    @After(value = "execution(* com.random.service.EService.*(..)) && args(eId, fName, lastName)")
    public void afterAdvice(JoinPoint joinPoint, String eId, String fName, String lastName) {
        System.out.println("After method:" + joinPoint.getSignature());
        System.out.println("Creating Employee with first name - " + fName+ ", second name - " + lastName+ " and
id - " + eId);
    }
}

```



- After method : com.test.model.Employee addEmployee(String,String,String)
 Creating Employee with first name - Ravi , second name - Shekhar and id - 123



- After method : com.test.model.Employee addEmployee(string,string,string)
 Creating Employee with first name - Ravi , second name - Shekhar and id - 123



- After method : com.test.model.Employee addEmployee(empld,firstName,secondName)
 Creating Employee with first name - Ravi , second name - Shekhar and id - 123



- After method : com.test.model.Employee addEmployee(String,String,String)
 Creating Employee with first name - Shekhar, second name - Ravi and id - 123

Question - 16 Error Handling

SCORE: 5 points

[Spring Boot](#) [Medium](#) [Exception Handling](#) [Aspect-Oriented Programming](#)

What scenario does this 'custom error handling' block handle?

```

@ControllerAdvice
public class CustomResourceNotFoundExceptionHandler {

    @ExceptionHandler(value = { NoHandlerFoundException.class })
    public ResponseEntity<Object> noHandlerFoundException(Exception ex) {

        return ResponseEntity.status(HttpStatus.BAD_REQUEST).body("Resource Not Found");
    }
}

```

- This block of code will be executed when we try to hit an API and it does not exist in the project scope.
- This block of code will be executed when we try to hit an API and its execution encounters an error.
- This block of code will be executed when we try to hit an API and it does not have enough data to execute.
- This block of code will be executed when we try to hit an API which we are not authorized to access.

Spring Boot Medium

```
@Configuration
public class filterSecure extends WebSecurityConfigurerAdapter {

    @Override
    protected void configure(HttpSecurity http) throws Exception {
        http.cors()
            .and()
            .authorizeRequests()
            .antMatchers(HttpMethod.GET, "/log/detail", "/data/app/**")
            .hasAuthority("SCOPE_read")
            .authenticated()
            .and()

        _____
    }
}
```

In this Spring-based code segment, the class is to be made Resource Server and a JWT format token access is needed. What is the missing code?

- .oauthServer()
.jwt();
- .oauth2ResourceServer()
.jwt();
- .jwt()
.oauthServer()
- .jwt()
.oauth2ResourceServer()

Question - 1**SCORE: 5 points****MySQL: Column Deletion****MySQL****Easy**

Choose the expression that deletes a column.

- DELETE status FROM queue
- ALTER TABLE queue DROP COLUMN status
- DELETE COLUMN status FROM queue
- ALTER TABLE queue DROP status COLUMN

Question - 2**SCORE: 5 points****MySQL: Self Join****MySQL****Easy**

Select an expression that demonstrates a self join type.

- SELECT * FROM users users, users clients
- SELECT * FROM users SELF JOIN users AS clients
- SELECT * FROM users JOIN users AS clients
- None of the above, a self join type does not exist in MySQL

Question - 3**SCORE: 5 points****MySQL: Sorting Direction****MySQL****Easy**

Select the extraneous expression (not the same as the others).

Select all that apply.

- SELECT * FROM categories ORDER BY id
- SELECT * FROM categories ORDER BY id ASC
- SELECT * FROM categories ORDER BY id DESC
- None of the above, all expressions are the same.

Question - 4

SCORE: 5 points

MySQL: Comma In From Clause

MySQL

Easy

Choose the correct explanation of the next query:

```
SELECT * FROM users, clients
```

- Selects everything in the “users” table, then adds columns from the “clients” table.
- If the “users” table exists, selects everything from there. Otherwise, queries the “clients” table as a fallback.
- Selects everything in the “users” table, then assigns the “clients” alias.
- Selects everything in the “users” table, then adds rows from the “clients” table.

Question - 5

SCORE: 5 points

MySQL: Space In From Clause

MySQL

Easy

Choose the correct explanation of the next query:

Select all that apply.

```
SELECT * FROM users clients
```

- Selects everything in the “users” table, then adds columns from the “clients” table.
- If the “users” table exists, selects everything from there. Otherwise, queries the “clients” table as a fallback.
- Selects everything in the “users” table, then assigns the “clients” alias.
- Selects everything in the “users” table, then adds rows from the “clients” table.

Question - 6

SCORE: 5 points

MySQL: Search In Specific Range Of Values

MySQL

Easy

Select the expression with the correct syntax.

- SELECT * FROM logs WHERE priority IN ('high', 'medium')
- SELECT * FROM logs WHERE priority VALUES IN ('high', 'medium')
- SELECT * FROM logs WHERE priority IN VALUES ('high', 'medium')

SELECT * FROM logs WHERE priority IN SET ('high', 'medium')

SCORE: 5 points

Question - 7

MySQL: Combining Tables

MySQL

Easy

Select the expressions that cause a MySQL error.

- SELECT * FROM logs l1 JOIN logs l2 ON l1.id = l2.id
- SELECT * FROM logs l1 AND FROM logs l2 ON l1.id = l2.id
- SELECT * FROM logs l1 UNION logs l2 ON l1.id = l2.id
- SELECT * FROM logs l1 LEFT JOIN logs l2 ON l1.id = l2.id

SCORE: 5 points

Question - 8

MySQL: Result Limit Offset

MySQL

Easy

Select the expression with the correct syntax.

- SELECT * FROM logs LIMIT 3, 5
- SELECT * FROM logs LIMIT 3 - 5
- SELECT * FROM logs LIMIT 3 TO 5
- SELECT * FROM logs LIMIT 3 FOR 5

SCORE: 5 points

Question - 9

MySQL: Rounding Numbers

MySQL

Easy

Choose an expression that returns 0.

- SELECT CEIL(.4)
- SELECT ROUND(.5)
- SELECT FLOOR(.6)
- None of the above, all expressions return 1

SCORE: 5 points

Question - 10

MySQL: Field Selection

MySQL

Easy

Select the expression that causes a MySQL error.

- SELECT 1, 2, 3
- SELECT 1 2 3
- SELECT '1 2 3'
- None of the above, all expressions are correct

Question - 11

MySQL: Result Set Combine Operator

SCORE: 5 points

[Easy](#) [MySQL](#)

This operator is used to combine the result set of two or more SELECT statements.

- FIND_IN_SET
- GROUP BY
- UNION
- COMBINE

Question - 12

MySQL: Condition Operators

SCORE: 5 points

[Easy](#) [Database](#)

Which expression causes a MySQL error?

- SELECT IF(1 < 2, 'yes', 'no')
- SELECT IFNULL(NULL, 10)
- SELECT CASE WHEN 1>0 THEN 'true' ELSE 'false' END
- SELECT IFNOT('true', FALSE)
- SELECT NULLIF(1, 1)

Question - 13

MySQL: GROUP BY Statement

SCORE: 5 points

[MySQL](#) [Easy](#)

Select the expression that is not correct.

- The GROUP BY statement groups rows with the same value into total rows.

- Aggregate functions (COUNT(), MAX(), MIN(), etc.) can be used only with an explicit GROUP BY statement.
- You can apply an additional condition after the grouping using the HAVING clause.
- None of the above, all expressions are correct.

Question - 14

SCORE: 5 points

MySQL: Joins

MySQL Easy

Which expression is not correct?

- MySQL joins are used to join rows from two or more tables based on the associated column between them.
- The INNER JOIN keyword selects records that have matching values in both tables.
- A self-join is just a normal join, but the table joins itself.
- Using the RIGHT JOIN keyword returns only records that are joined in the right way.

Question - 15

SCORE: 5 points

MySQL: PRIMARY KEY Constraint

Easy MySQL

Which expression is not correct?

- The primary key uniquely identifies each record in the table.
- The primary key must contain unique values.
- The primary key can contain NULL values, but this is highly undesirable for performance reasons.
- A table can have only one primary key.

Question - 16

SCORE: 5 points

MySQL: NULL Constraint

MySQL Easy Constraints

Which of the following SQL CREATE TABLE statements differs from the others in terms of the NULL constraint?

- CREATE TABLE users (id INT)
- CREATE TABLE users (id INT NULL)
- CREATE TABLE users (id INT NOT NULL)
- None of the above, all expressions are the same.

Question - 17

MySQL: Deleting a Table

SCORE: 5 points

MySQL Easy

Select the expression(s) with the correct syntax.

- DROP TABLE IF EXISTS users
- DELETE TABLE IF EXISTS users
- DROP TABLE users
- DESTROY TABLE users

Question - 18

MySQL: Deleting a Database

SCORE: 5 points

Easy

Which expression has the correct syntax?

- REMOVE DATABASE users
- DELETE DATABASE users
- DROP DATABASE users
- DESTROY DATABASE users

Question - 19

MySQL: Creating a Database

SCORE: 5 points

Easy MySQL

Select the expression with the correct syntax.

- CREATE DATABASE WITH NAME users
- CREATE DB WITH NAME users
- CREATE DB users
- CREATE DATABASE users

Question - 20

MySQL: Comment Types

SCORE: 5 points

MySQL Easy

Which of the following are MySQL comments?

- # this is the comment
- this is the comment
- /* this is the comment */
- <!-- this is the comment -->

Question - 21

SCORE: 5 points

MySQL: Join Type That Left Then Right

MySQL Easy

Which of these MySQL join types return all records from the left table and the matched records from the right table?

Select all that apply.

- LEFT JOIN
- LEFT INNER JOIN
- LEFT RIGHT JOIN
- LEFT OUTER JOIN

Question - 22

SCORE: 5 points

MySQL: String Comparison

MySQL Easy

Select the expression that causes a MySQL error.

- SELECT * FROM transactions WHERE flag IN('A', 'B', 'C')
- SELECT * FROM transactions WHERE flag BETWEEN 'A' AND 'C'
- SELECT * FROM transactions WHERE flag >= 'A' AND flag <= 'C'
- none of the above, all expressions are correct

Question - 23

SCORE: 5 points

MySQL: Like Expression Pattern

MySQL Easy

Select all ID values that will NOT be matched by the following query

Select all that apply.

```
SELECT id FROM customers WHERE id LIKE '_a%'
```

- _a%
- fa23345f-ad73-404d-8988-72f1385e3aeb
- _a466d3
- none of the above, all values will be matched

Question - 24

SCORE: 5 points

MySQL: Join Type That Matching Values in Both Tables

MySQL Easy

Which MySQL join type returns records that have matching values in both tables?

Select all that apply.

- OUTER JOIN
- INNER JOIN
- CROSS JOIN
- FULL JOIN

Question - 25

SCORE: 5 points

MySQL: Results Limit

MySQL Easy

Select expressions with correct syntax.

- SELECT * FROM customers LIMIT 5 OFFSET 10
- SELECT * FROM customers LIMIT 5 + 10
- SELECT * FROM customers LIMIT 5 TO 10
- SELECT * FROM customers LIMIT 5, 10

Question - 26

SCORE: 5 points

MySQL: Results Order

MySQL Easy

Select the expression that causes a MySQL error.

Select all that apply.

- SELECT id, name FROM customers ORDER BY name ASC
- SELECT id, name FROM customers ORDER BY name
- SELECT id, name FROM customers ORDER BY 2

SCORE: 5 points

Question - 27**MySQL: White Space in Field Alias** MySQL Easy

Select the expressions with correct syntax.

- SELECT name AS "customer name" FROM customers
- SELECT name AS 'customer name' FROM customers
- SELECT name AS `customer name` FROM customers
- SELECT name AS customer\ name FROM customers

Question - 28

SCORE: 5 points

MySQL: Join Types MySQL Easy

Which of the following are valid MySQL join types?

Select all that apply.

- LEFT
- CROSS
- RIGHT
- TOP

Question - 29

SCORE: 5 points

Student Result SQL Easy

Consider the table below:

Table Student

ID	SCORE
1	2
2	5
3	5
4	6
5	9

How many tuples does the result of the following SQL query contain where result = 'Supplementary'?

```
SELECT id,
CASE
    WHEN score<=2 THEN 'Fail'
    WHEN score<6 THEN 'Supplementary'
    ELSE 'Distinction'
END as result
FROM student
```

- 2
- 3
- 0
- 1

Question - 30

Common Students

SCORE: 5 points

SQL **Easy**

Consider the following tables:

Table s1

column	description
id	unique identifier
name	student name

Table s2

column	description
id	unique identifier
name	student name

Which of the following SQL queries will result in students' names common to both tables having the same id, sorted alphabetically? Multiple students can have the same name but their ids will be unique.

- select s1.name from s1 INNER JOIN s2 ON s1.id=s2.id ORDER BY s1.name
- select name from s1 OUTER JOIN s2 ON s1.id=s2.id ORDER BY id
- select s1.name from s1 LEFT JOIN s2 ON s1.id=s2.id ORDER BY name
- select name from s1 LEFT JOIN s2 ON s1.id>s2.id

Question - 31

SCORE: 5 points

Output Rows

SQL

Easy

Consider the following tables:

Table A

ID	Name	Salary
101	John	1500
102	Steve	1500
103	Remo	500
104	Alan	2000
105	Maverick	1000
106	Glen	2000
107	Jacob	2000

Table B

ID	Department
101	Sales
102	Finance
103	Finance
104	HR
105	HR
106	Sales
107	IT

How many tuples does the following SQL query return?

```
SELECT * FROM (SELECT b.department,
    Avg(a.salary) AS avg_Salary
    FROM a
    LEFT JOIN b
    ON a.id = b.id
    GROUP BY b.department) AS C
WHERE C.avg_salary > 1500
```

0

1

2

Question - 32

SQL Order of Operations

SCORE: 5 points

 SQL Easy

Which is the correct order of execution of operations in SQL?

- SELECT, FROM, JOIN, WHERE, GROUP BY, HAVING, ORDER BY
- SELECT, FROM, GROUP BY, WHERE, HAVING, ORDER BY
- FROM, GROUP BY, WHERE, ORDER BY, HAVING, SELECT
- SELECT, FROM, GROUP BY, HAVING, WHERE, ORDER BY

Question - 33

Select Statements

SCORE: 5 points

 SQL Easy Database

Which of the following SELECT statements prints the string 56? Choose all that apply.

- SELECT SUBSTR ('123456',5) FROM DUAL ;
- SELECT SUBSTR ('123456',-2) FROM DUAL ;
- SELECT SUBSTR ('123456',5,2) FROM DUAL ;
- SELECT SUBSTR ('123456',-2,2) FROM DUAL

Question - 34

Print the Domain Name

SCORE: 5 points

 SQL Easy Database

The email has the value of an email ID. Fill in the blanks of the following SQL statements so that it prints the domain name. The domain name of nyname@abcd.com is abcd.com.

SELECT SUBSTR (email,INSTR (email,_____))FROM DUAL ;

- '@',1)+1)
- '@',1))
- '@',1)-1)
- none of these

Question - 35

SCORE: 5 points

Which command?

SQL Easy Database

There are multiple records in a table and some are duplicates. Which command will fetch only one copy of the duplicate records?

- SELECT DISTINCT
- SELECT UNIQUE
- SELECT DIFFERENT
- All of the above

Question - 36

SCORE: 5 points

SQL ROUND

SQL Easy Database

The SQL statement

SELECT ROUND(45.926, -2) FROM DUAL ;

- is illegal
- prints garbage
- prints 45.92
- prints 0

Question - 37

SCORE: 5 points

Which command is behaving incorrectly?

SQL Database Easy

What command should you try if DBMS_OUTPUT.PUT_LINE is not doing what it is supposed to do?

- SET ECHO ON
- SET DISPLAY ON
- SET TERMOUT ON
- SET SERVEROUTPUT ON

Question - 1

SCORE: 5 points

MySQL: Null Value Comparison**MySQL** **Medium**

Choose the expressions that are not correct.

Select all that apply.

- SELECT * FROM categories WHERE id <> NULL
- SELECT * FROM categories WHERE id != NULL
- SELECT * FROM categories WHERE id IS NULL
- SELECT * FROM categories WHERE id IS NOT NULL

Question - 2

SCORE: 5 points

MySQL: Group By Clause**MySQL** **Medium****Select the expression that causes a MySQL error.**

Select all that apply.

- SELECT AVG(id) FROM categories
- SELECT AVG(id) FROM categories GROUP BY type
- SELECT 'average', AVG(id) FROM categories GROUP BY 1
- None of the above, all expressions are correct

Question - 3

SCORE: 5 points

MySQL: Nested Comments**MySQL** **Medium****Select the expressions that cause a MySQL error.**

- SELECT * FROM /* # */ categories
- SELECT * FROM /* /* # */ categories
- SELECT * FROM /* # *//* categories
- SELECT * FROM /* /* # *//* categories

Question - 4

SCORE: 5 points

MySQL: Ampersand in Select Clause

[MySQL](#) [Medium](#)

Select the expression that causes a MySQL error.

- SELECT level & depth FROM Categories
- SELECT level && depth FROM Categories
- SELECT level &&& depth FROM Categories
- SELECT level &'&'&& depth FROM Categories
- None of the above, all expressions are correct.

Question - 5

SCORE: 5 points

MySQL: Pipe In Select Clause

[MySQL](#) [Medium](#)

Select the expression that causes a MySQL error.

- SELECT level | depth FROM Categories
- SELECT level || depth FROM Categories
- SELECT level ||| depth FROM Categories
- SELECT level ||'||' depth FROM Categories

Question - 6

SCORE: 5 points

MySQL: String Trimming

[Medium](#) [MySQL](#)

Choose the expression that retrieves the base domain "domain.com".

- SELECT LTRIM('www.domain.com', 'www.')
- SELECT TRIM(LEADING 'www.' FROM 'www.domain.com')
- SELECT TRIM(LEFT 'www.' FROM 'www.domain.com')
- All expressions are correct

Question - 7

SCORE: 5 points

MySQL: Substring Extraction

[MySQL](#) [Medium](#)

Choose the expression that retrieves the base domain "domain.com".

- SELECT SUBSTRING_INDEX('my.subdomain.domain.com', '.', -2)
- SELECT SUBSTRING_INDEX('my.subdomain.domain.com', 'my.subdomain.', 1)
- SELECT SUBSTRING_INDEX('my.subdomain.domain.com', '.', 2, 2)
- All expressions are correct

Question - 8

SCORE: 5 points

MySQL: Substring Function

MySQL Medium

Select the MySQL expression that returns a different value from the others.

- SELECT SUBSTR('user@domain.com', 5, 1)
- SELECT SUBSTR('user@domain.com' FROM 5 FOR 1)
- SELECT SUBSTR('user@domain.com' FROM -11 FOR 1)
- None of the above, all expressions return the same value.

Question - 9

SCORE: 5 points

MySQL: Comparing Types

MySQL Medium

Choose the expression that returns 0.

- SELECT '0' = 0
- SELECT 0 IS FALSE
- SELECT '0' IS FALSE
- SELECT STRCMP('0', 0)

Question - 10

SCORE: 5 points

MySQL: Repeating Strings

MySQL Medium

Select the expression that causes a MySQL error.

- SELECT STRREPEAT('', 10)
- SELECT SPACE(10)

SELECT REPEAT(' ', 10)

None of the above, all expressions are correct.

SCORE: 5 points

Question - 11

MySQL: ANY and ALL Operators

MySQL

Medium

Select the expression that is not correct.

- The ANY and ALL operators allow the comparison of a value in one column to a range of other values.
- The ANY operator returns the first available record as the result of a query, while the ALL operator returns a subset only if the entire query condition is true.
- The ALL operator returns TRUE if all sub-query values satisfy the condition.
- The ANY operator returns TRUE if any of the sub-query values meet the condition.

SCORE: 5 points

Question - 12

MySQL: AUTO_INCREMENT Attribute

Medium

MySQL

Which expression is not correct?

- If the column is declared NOT NULL, it is possible to assign NULL to the column to generate sequence numbers.
- Updating an existing AUTO_INCREMENT column value resets the AUTO_INCREMENT sequence.
- The initial value for AUTO_INCREMENT is fixed and always equal to 1. It will increase by 1 for each new entry.
- When the column reaches the upper limit of the data type, the next attempt to generate a sequence number fails.

SCORE: 5 points

Question - 13

MySQL: DEFAULT Constraint

MySQL

Medium

Select the expressions that cause a MySQL error.

- CREATE TABLE users (user VARCHAR(255) DEFAULT 'test')
- CREATE TABLE users (status VARCHAR(255) DEFAULT NULL)
- CREATE TABLE users (id VARCHAR(255) DEFAULT NOT NULL)
- CREATE TABLE users (id VARCHAR(255) DEFAULT RAND())

SCORE: 5 points

Question - 14

MySQL **Medium** **Constraints**

Which expression is not correct?

- A column might have a foreign key reference to itself.
- MySQL supports foreign key references between one column and another within a table.
- Corresponding columns in the foreign key and the referenced key must have similar data types.
- None of the above, all expressions are correct.

Question - 15**SCORE: 5 points****MySQL: UNIQUE Constraint****MySQL** **Medium**

Which expression causes a MySQL error?

- CREATE TABLE users (first_name VARCHAR(255), last_name VARCHAR(255), CONSTRAINT unique_name UNIQUE (first_name, last_name))
- CREATE TABLE users (first_name VARCHAR(255) UNIQUE, last_name VARCHAR(255) UNIQUE)
- CREATE TABLE users (first_name VARCHAR(255), last_name VARCHAR(255), UNIQUE (first_name, last_name))
- None of the above, all expressions are correct.

Question - 16**SCORE: 5 points****MySQL: Table Constraints****MySQL** **Medium**

Select an expression that is not a table constraint definition.

- PRIMARY KEY
- FOREIGN KEY
- CHECK
- None of the above.

Question - 17**SCORE: 5 points****MySQL: Table Alteration****Medium**

Select the expressions that are correct.

- The ALTER TABLE statement is used to add, remove, or change existing columns in a table.
- The ALTER TABLE statement is used to add and remove various constraints in a table.
- The ALTER TABLE statement is the preferred method to delete all data in a table.
- The ALTER TABLE statement cannot be used to rename a table.

Question - 18

SCORE: 5 points

MySQL: Creating a Table

MySQL Medium

Which expression causes a MySQL error?

- CREATE TABLE users (id INT PRIMARY KEY)
- CREATE TABLE IF NOT EXISTS users_backup LIKE users
- CREATE TABLE IF NOT EXISTS users_backup AS SELECT * FROM users
- None of the above, all expressions are correct.

Question - 19

SCORE: 5 points

MySQL Group By Condition

MySQL Medium

Select the expressions that cause a MySQL error.

Select all that apply.

- SELECT customer_id, COUNT(*) FROM transactions GROUP BY customer_id HAVING COUNT(*) > 10
- SELECT customer_id, COUNT(*) AS transactions FROM transactions GROUP BY customer_id HAVING transactions > 10
- SELECT customer_id, COUNT(*) AS transactions FROM transactions WHERE transactions > 10 GROUP BY customer_id
- SELECT customer_id, COUNT(*) AS transactions FROM transactions GROUP BY 1 HAVING transactions > 10

Question - 20

SCORE: 5 points

MySQL Group Field

MySQL Medium

Select the expression that causes a MySQL error.

Select all that apply.

- SELECT customer_id, ANY_VALUE(amount) FROM transactions GROUP BY customer_id

- SELECT customer_id, RAND(amount) FROM transactions GROUP BY customer_id
- SELECT customer_id, SUBSTRING_INDEX(GROUP_CONCAT(amount ORDER BY RAND()), ',', 1) FROM transactions GROUP BY customer_id
- none of the above, all expressions are correct

Question - 21

MySQL: Group By Having

SCORE: 5 points

MySQL Medium

Select the expression(s) that will cause a MySQL error.

Select all that apply.

- SELECT customer_id, COUNT(*) FROM transactions GROUP BY customer_id HAVING COUNT(*) > 10
- SELECT customer_id, COUNT(*) AS transactions FROM transactions GROUP BY customer_id HAVING transactions > 10
- SELECT customer_id, COUNT(*) FROM transactions GROUP BY customer_id HAVING COUNT(customer_id) > 10
- SELECT customer_id, COUNT(*) FROM transactions GROUP BY 1 HAVING COUNT(*) > 10
- none of the above, all expressions are correct

Question - 22

MySQL: Group By Order

SCORE: 5 points

MySQL Medium

Which expression causes a MySQL error?

Select all that apply.

- SELECT is_active, COUNT(*) FROM transactions GROUP BY is_active ORDER BY 2
- SELECT is_active, COUNT(*) FROM transactions GROUP BY is_active ORDER BY COUNT(*)
- SELECT is_active, COUNT(*) AS transactions FROM transactions GROUP BY is_active ORDER BY transactions
- none of the above, all expressions are correct

Question - 23

MySQL: Group Variations

SCORE: 5 points

MySQL Medium

Select any expression(s) with the correct syntax.

Select all that apply.

- SELECT customer_id, MAX(is_active) FROM transactions GROUP BY customer_id HAVING MAX(is_active)
- SELECT customer_id, is_active FROM transactions GROUP BY customer_id HAVING MAX(is_active)

SELECT customer_id, DISTINCT is_active FROM transactions GROUP BY customer_id HAVING MAX(is_active)

SELECT customer_id, MAX(is_active) AS is_active FROM transactions GROUP BY customer_id HAVING is_active

Question - 24

SCORE: 5 points

MySQL: Distinct Select Multiple Tables

MySQL Medium

Select any expression(s) with the correct syntax.

Select all that apply.

SELECT DISTINCT id FROM customers, customers

SELECT a.id, DISTINCT b.id FROM customers a, customers b

SELECT DISTINCT a.id, DISTINCT b.id FROM customers a, customers b

SELECT DISTINCT a.id, b.id FROM customers a, customers b

Question - 25

SCORE: 5 points

MySQL: Substring Function

MySQL Medium

Select the expression(s) with the correct syntax.

SELECT SUBSTRING(status, 2, 5) FROM customers

SELECT SUBSTRING(status FROM 2 FOR 5) FROM customers

SELECT SUBSTRING(status FROM 2 TO 5) FROM customers

SELECT SUBSTRING(status WITH 2 TO 5) FROM customers

Question - 26

SCORE: 5 points

MySQL: Select Multiple Tables

MySQL Medium

Select the expressions that cause a MySQL error.

Select all that apply.

SELECT a.id, b.id FROM customers a, customers b

SELECT id, id FROM customers, customers

SELECT id FROM customers, customers

SELECT a.id, id FROM customers a, customers

SQL Easy

Which of the following statement(s) are **NOT** correct:

- The PRIMARY KEY must be unique and not null for each table.
- The DROP command is used to remove the table definition and its contents whereas the TRUNCATE command is used to delete all the rows from the table.
- DELETE command is a DDL command whereas DROP is a DML command.
- ACID properties in databases refer to Atomicity, Complexity, Isolation, and Duplicacy.

Question - 1
Custom Error

SCORE: 5 points

[Error Handling](#) [Javascript](#) [Easy](#) [Type Checking](#) [Variable Scopes](#)

What is the output of this JavaScript code snippet?

```
class CustomError extends Error {
  constructor(message) {
    super(message);
    this.name = "CustomError";
  }
}

function validateData(data) {
  if (!data || typeof data !== "object") {
    throw new CustomError("Invalid data provided");
  }

  if (!data.hasOwnProperty("id") || typeof data.id !== "number") {
    throw new CustomError("Data object is missing an id property");
  }

  return true;
}

const data1 = { id: 42 };
const data2 = "Invalid data";

try {
  validateData(data1);
  console.log("Data1 is valid");
  validateData(data2);
  console.log("Data2 is valid");
} catch (error) {
  if (error instanceof CustomError) {
    console.log(`CustomError: ${error.message}`);
  } else {
    console.log(`Error: ${error.message}`);
  }
}
```

- Data1 is valid
CustomError: Invalid data provided

- Data1 is valid
CustomError: Data object is missing an id property

- Data1 is valid
Error: Invalid data provided

Question - 2

SCORE: 5 points

SetTimeout[Functions](#) [Javascript](#) [events](#) [Easy](#) [Loops](#) [Javascript Timers](#) [Arrays](#)

What is the output of this JavaScript code snippet?

```
const numbers = [1, 2, 3, 4, 5];

for (var i = 0; i < numbers.length; i++) {
  setTimeout(() => {
    console.log(`Number: ${numbers[i]}`);
  }, i * 1000);
}
```

 Number:1 Number:2 Number:3 Number:4 Number:5 Number: undefined Number: undefined Number: undefined Number: undefined Number: undefined Number:5 Number:5 Number:5 Number:5 Number:5 No output will be displayed.**Question - 3**

SCORE: 5 points

Closures[Javascript](#) [Javascript Events](#) [Closures](#) [Easy](#) [Closure](#)

What is the output of the following code?

```
const series = (...funcs) => (arg) => {
  return funcs.reduce((prev, curr) => curr(prev), arg);
};
```

```
const result = series(num => num * 10, num => num + 20, num => num / 2, num => num - 5)(4);
```

- 20
- 25
- 30
- 0

Question - 4

JavaScript: Objects

SCORE: 5 points

JavaScript | Easy | Error Handling

Three of the following snippets will create a new JavaScript object with the name "Alex" and age 25. Which one uses incorrect syntax?

- ```
let person = new Object({name: "Alex", age:25});
```
- ```
let person = {name: "Alex", age: 25};
```
- ```
let person = {}
person.name = "Alex";
person.age = 25;
```
- ```
let person;
person['name'] = "Alex";
person['age'] = 25;
```

Question - 5

JavaScript: Typecasting Functions I

SCORE: 5 points

JavaScript | Easy | Hoisting

Match the JavaScript typecasting functions with their respective output.

Function	Output
<code>1.String([])</code>	A. 0

2.String({})	B. -Infinity
3. Number(null)	C. "[object Object]"
4. Number("-Infinity")	D. ""

1. A
 2. B
 3. D
 4. C

1. D
 2. C
 3. A
 4. B

1. A
 2. D
 3. B
 4. C

- None of the above

Question - 6

SCORE: 5 points

JavaScript: Typecasting Functions II

[JavaScript](#) [Easy](#)

Match the JavaScript typecasting functions with their respective output.

Function Call	Output
1.Boolean(Infinity)	a. 20
2.Number([20, 30])	b. true
3. Boolean("")	c. NaN
4. Number(["20"])	d. False

- 1-b
 2-c
 3-d
 4-a

- 1-d
 2-a
 3-b
 4-c

- 1-d
 2-b
 3-a
 4-c

None of the above

Question - 7

SCORE: 5 points

Declare variables with `const` keyword in JavaScript

[Easy](#) [Javascript Aptitude](#)

One way to declare a variable in JavaScript is to use the keyword `const`. Which of the following are true about `const`? Choose one or more.

- A variable declared with `const` is always globally scoped.
- A variable declared with `const` is always block-scoped.
- A variable declared with `const` can be re-declared.
- A variable declared with `const` can be assigned to later.

Question - 8

SCORE: 5 points

Declare variables with `let` keyword in JavaScript

[Easy](#) [Javascript Aptitude](#)

One way to declare a variable in JavaScript is to use the keyword `let`. Which of the following are true about `let`? Choose one or more.

- A variable declared with `let` is always globally scoped.
- A variable declared with `let` is always block-scoped.
- A variable declared with `let` can be re-declared.
- A variable declared with `let` can be assigned to later.

Question - 9

SCORE: 5 points

JSON data format

[Easy](#) [Javascript Aptitude](#)

JSON uses a few strict rules to encode its content. Which of the following are true about those rules? Choose one or more.

- JSON uses double quotation marks to delimit strings.
- JSON uses single quotation marks to delimit strings.
- Trailing commas are forbidden.
- Trailing commas are allowed and recommended because of cleaner diffs when working with version control systems.

Question - 10

SCORE: 5 points

`localStorage` object

The localStorage object is used to store the data locally. Which of the following are true about localStorage objects? Select one or more.

- The data in localStorage is stored without an expiration date.
- localStorage allows for several data types, including numbers and strings.
- All data values stored in localStorage are stored as strings.
- localStorage is used to store limited data sizes. It is usually restricted to just a few megabytes.

Question - 11

SCORE: 5 points

JavaScript Document Object Model Functions Easy

Using JavaScript, check whether the browser is online. Display "*I am online*" if it is. Otherwise, display "*I am offline*".

If the browser is online, display the current *latitude* and *longitude* of your location.

```
<p id="status"></p>
<p id="location"></p>
```

The `<p>` with `id="status"` is used to display the status: "*I am offline*" or "*I am online*".

The `<p>` with `id="location"` is used to display the latitude and longitude in the format below:

Latitude: 12.9321589

Longitude: 77.61325529999999

- function checkStatus() {

 if(navigator.onLine){
 document.getElementById("status").innerHTML = "I am online";
 if (navigator.geolocation) {
 navigator.geolocation.getCurrentPosition(printLocation);
 }

 }
 else

 document.getElementById("status").innerHTML = "I am offline";
 }
 function printLocation(position) {
 document.getElementById("location").innerHTML = "Latitude: " + position.coords.latitude +
 "
Longitude: " + position.coords.longitude;
 }

 function checkStatus() {

 if(navigator.onLine){

```

document.getElementById("status").innerHTML = "I am online";
if (navigator.geolocation) {
navigator.geolocation.getCurrentPosition(printLocation);
}

else

document.getElementById("status").innerHTML = "I am offline";
}

function printLocation(position) {
document.getElementById("location").innerHTML = "Latitude: " + position.coords.latitude +
"<br/>Longitude: " + position.coords.longitude;
}

 function checkStatus() {

if(navigator.online){
    document.getElementById("status").innerHTML = "I am online";
    if (navigator.geolocation) {
navigator.geolocation.getCurrentPosition(printLocation);
    }
}

else

document.getElementById("status").innerHTML = "I am offline";
}

function printLocation(position) {
    document.getElementById("location").innerHTML = "Latitude: " + position.coords.latitude +
    "<br/>Longitude: " + position.coords.longitude;
}

 function checkStatus() {

if(navigator.onLine){
    document.getElementById("status").innerhtml = "I am online";
    if (navigator.geolocation) {
navigator.geolocation.getCurrentPosition(printLocation);
    }
}

else
    document.getElementById("status").innerhtml = "I am offline";
}

function printLocation(position) {
    document.getElementById("location").innerhtml = "Latitude: " + position.coords.latitude +
    "<br/>Longitude: " + position.coords.longitude;
}

```

Question - 12
Code Prediction

SCORE: 5 points

JavaScript Easy Loops Variable Scopes

Predict the output of the following code:

```
function Education() {
    this.education = "B.Tech";
}

function main() {
    Person = new Education();
    Person.name = "Michael";
    Person.surname = "Hicks";
    var Person;
    Person.residence = "Bangalore";
    Person.age = 23;
    Object.freeze(Person);
    console.log(delete Person.name);

    for (const item in Person) {
        console.log(item);
    }
}
```

- False education name surname residence age
- false education name surname residence age
- True education surname residence age
- true education surname residence age
- false education surname residence age
- true education name surname residence age
- Compile time error

Question - 13 Array Element Passing

SCORE: 5 points

[JavaScript](#) [Exception Handling](#) [Arrays](#) [Closure](#) [Loops](#) [Easy](#)

Examine the code snippet below. You have to identify the correct snippet for the main and pass each element of the array `list=[0,4,1,3]` such that for every number less than 2, the error message, "`num should be greater than 2`", is displayed.

Otherwise, the value returned from the function `twice` is displayed. What could be the possible solution(s)?

```

function Myfunc() {
  this.twice = function(num) {
    if (num < 2) {
      throw "num should be greater than 2"
    }
    return num * 2;
  }
}

```

const myfunc = new Myfunc();
const list = new Array(0, 4, 1, 3);
for (let i = 0; i < 4; i++) {
 try{
 const res = myfunc.twice(list[i]);
 console.log(res);
 } catch (e) {
 console.log(e);
 }
}

const myfunc = new Myfunc();
const list = {0, 4, 1, 3};
for (let i = 0; i < 4; i++) {
 try{
 const res = myfunc.twice(list[i]);
 console.log(res);
 } catch (e) {
 console.log(e);
 }
}

const myfunc = new Myfunc();
const list = [0, 4, 1, 3];
for (let i = 0; i < 4; i++) {
 try{
 const res = myfunc.twice(list[i]);
 console.log(res);
 } catch (e) {
 console.log(e);
 }
}

const myfunc = new Myfunc();
const list = [0, 4, 1, 3];
try {
 for (let i = 0; i < 4; i++) {
 const res = myfunc.twice(list[i]);
 console.log(res);
 }
} catch (e) {
 console.log(e);
}

Question - 14

SCORE: 5 points

Closures JavaScript Easy Closure

Select the option that has the correct sequence of first five alert messages, when the following javascript code snippet is run:

```

function func(x) {
  var z = 8;

  return function(y) {

```

```
    alert(x + y + z);
}

var n1 = new Number(32);
var a1 = func(n1);
var n2 = new Number(16);
var a2 = func(n2);
var n3 = new Number(8);
var a3 = func(n3);
var n4 = new Number(4);
var a4 = func(n4);
var n5 = new Number(2);
var a5 = func(n5);
a1(2);
a2(4);
a3(8);
a4(16);
a5(32);
```

- 34, 36, 40, 48, 64
- 2, 4, 8, 16, 32
- 24, 24, 28, 28, 42
- 42, 28, 24, 28, 42

Question - 15

SCORE: 5 points

Which of the following is not true of Javascript?

[JavaScript](#) [Web Development](#) [Easy](#) [Javascript Aptitude](#)

Which of the following is not true of Javascript?

- Javascript is case sensitive
- Semicolons at the end of Javascript statements are required
- Javascript statements can be grouped together in blocks
- Javascript is loosely typed

Question - 16

SCORE: 5 points

What is the correct way to create a javascript array?

[JavaScript](#) [Web Development](#) [Easy](#) [Javascript Aptitude](#) [Arrays](#)

What is the correct way to create a javascript array?

- var items = ["Orange", "Apple"];

- var items = {"Orange","Apple"};
- var items = new array("Orange","Apple");
- var items[] = {"Orange","Apple"};

Question - 17

What is the data type of null in Javascript?

SCORE: 5 points

JavaScript Web Development Easy Javascript Aptitude

What is the data type of *null* in Javascript?

- undefined
- integer
- object
- none

Question - 18

Which of the following javascript functions perform the given tasks correctly?

SCORE: 5 points

JavaScript Web Development Easy ES6 Features

Which of the following javascript functions perform the given tasks correctly?

- The function takes one numeric variable as parameter.
- If the variable is 0 than it creates a dialogue box which says "zero".
- If the variable is 1 than it creates a dialogue box which says "one".
- Otherwise it creates a dialogue box which says "Invalid input".

const myFunction = value => {
 switch (value) {
 case 0:
 str = "0";
 break;
 case 1:
 str = "1";
 break;
 default:
 str = "Invalid input";
 break;
 }
 return alert(str);
}

const myFunction = value => {
 switch (value) {
 case 0:
 str = "zero";
 case 1:
 str = "one";
 default:

```
str = "Invalid input";
}
alert(str);
}
```

const myFunction = value => {
 switch (value) {
 case "0":
 str = "zero";
 break;
 case "1":
 str = "one";
 break;
 default:
 str = "Invalid input";
 break;
 }
 alert(str);
}

const myFunction = value => {
 switch (value) {
 case 0:
 str = "zero";
 break;
 case 1:
 str = "one";
 break;
 default:
 str = "Invalid input";
 break;
 }
 alert(str);
}

Question - 19

SCORE: 5 points

JS Data Types

[JavaScript](#) [Web Development](#) [Easy](#) [Javascript Aptitude](#)

Which of the following is not a primitive Datatype in Javascript?

- Array
- Number
- String
- Boolean

Question - 20

Loops in JavaScript

SCORE: 5 points

[JavaScript](#) [Web Development](#) [Easy](#) [Loops](#)

Which of the following is not a looping structure in JavaScript?

- for
- while
- do - while
- do - if
- for each

Question - 21

SCORE: 5 points

Which of the following is not a core datatype?

- Python Easy
-
- Lists
 - Dictionary
 - Tuples
 - Class

Question - 22

SCORE: 5 points

What is the output?

- JavaScript Web Development Easy Type Checking
-

What is the value of y after the following code?

```
let x;  
let y = x === null;
```

- false
- true
- undefined
- null

Question - 23

SCORE: 5 points

How can you add a comment in a JavaScript?

- Web Development JavaScript Front-End Development Easy
-

How can you add a comment in a JavaScript?

- //This is a comment
- REM This is a comment-->
- 'This is a comment
- #This is a comment

Question - 24 JavaScript Assignment

SCORE: 5 points

Language Proficiency JavaScript Problem Solving Easy Javascript Aptitude

Consider the following JavaScript code snippet:

```
function foo () {  
    return 5  
}
```

What will the code `let myVar = foo;` do?

- Assign the integer value `5` to the variable `myVar`
- Assign a reference to the `foo` function to the variable `myVar`
- Throw an exception
- Nothing

**Question - 1**

SCORE: 5 points

Query Based Question 3

Consider the following code.

```
import React from "react";

class App extends React.Component {
state = {
name: "",
email: "",
contact: ""
};

setValue = (event) => {};

render() {
const { name, email, contact } = this.state;
return (
<React.Fragment>
    <p>Name = {name}</p>          <p>Email = {email}</p>          {" "}
<p>Contact = {contact}</p>
    <input name="name" onChange={this.setValue} />
    <input name="email" onChange={this.setValue} />
    <input name="contact" onChange={this.setValue} />      {" "}
</React.Fragment>
);
}
}

export default App;
```

There is a common `setValue` function that is used to update all the states on change. Which of the following options provides that functionality?

- `setValue = (event) => { this.setState({ [event.target.name]: event.target.value }); };`
- `setValue = (event) => { this.setState({event.target.name: event.target.value }); };`
- `setValue = (event) => { this.setState({ [event.name]: event.value }); };`
- None of the above

Question - 2

SCORE: 5 points

Class Component Initial Rendering

Consider the following code.

```

import React from "react";

class App extends React.Component {
  constructor(props) {
    super(props);
    this.state = {
      Number: 0
    };
  }

  componentDidMount() {
    this.increment()
    this.increment()
    this.increment()
  }

  componentWillUnmount() {
    this.increment()
  }

  increment = () => {
    this.setState({
      Number: this.state.Number + 1
    });
  };

  render() {
    return (
      <div>
        <p>Number: {this.state.Number}</p>
        <button onClick={this.increment}>Increment</button>
      </div>
    );
  }
}

export default App;

```

While first rendered, what is displayed in the *p* tag?

- 0
- 1
- 3
- Undefined

Question - 3 React Class Component State

SCORE: 5 points

React Class Components Easy

What is the output?

```

import React from "react"

class App extends React.Component {
  constructor(props) {
    super(props);
    this.state = { Number: 0 };
  }
}

```

```

componentDidMount() {
  this.setState({ Number: 1 });
  console.log(this.state.Number);
  this.setState({ Number: 2 });
  console.log(this.state.Number);
  this.setState({ Number: 3 }, () => {
    console.log(this.state.Number);
  });
}

render() {
  return <div>{this.state.Number}</div>;
}
}

export default App;

```

- 0,0,0
- 1,1,1
- 1,2,3
- 0,0,3

Question - 4 Array Functions

SCORE: 5 points

React Array Functions Easy

Consider the following code snippet.

```

import React from "react";

function App( ) {
  const data = [ { Name: "Ranjit", Roll: 122 }, { Name: "Ron", Roll: 122 } ];
  const display = () => {
    let result;
    return (
      <div>
        <h1>{result.Name}</h1>
        <h1>{result.Roll}</h1>
      </div>
    );
  };
  return <div>{display()}</div>;
}

export default App;

```

Which is the preferred method to initialize the result variable to fetch an object named *Ranjit*?

- let result= data.map((data) => data.name=="Ranjit");
- let result= data.filter((data) => data.name=="Ranjit");
- let result= data.find((data) => data.name=="Ranjit");
- None of the above

Question - 5 State Update

SCORE: 5 points

React React Hooks Functional Components Easy

Consider the following code.

```
import React, { useState } from "react";

const App = () => {
  const [student, setStudent] = useState({
    Name: "Abc",
    Roll: "123",
    Presence: 0,
  });
  const update = (Presence) => {
  };

  return (
    <>
      <p>{student.Presence}</p>
      <button onClick={() => update(student.Presence + 1)}>
        Update Student
      </button>
    </>
  );
};

export default App;
```

Which option increments the student presence by 1?

- this.setState({Presence});
- setStudent(pre=>{...pre,Presence});
- setStudent({ ...student, Presence });
- None of the above

Question - 6 Initial Rendering

SCORE: 5 points

React Easy Functional Components State Management

What is the output of the following code?

```
import React, { useState } from "react";

const App = () => {
  const [number, setNumber] = useState(0);
  console.log(number); //output
  return (
    <>
      <p>{number}</p>
      <button onClick={setNumber((pre) => pre + 1)}>increment</button>
    </>
  );
};

export default App;
```

```
</>
);
};

export default App;
```

- 0
- 1
- undefined
- Error

Question - 7

Event

SCORE: 5 points

[Event Handlers](#) [Easy](#)

Which React code snippet returns the mouse position?



```
useEffect (() => {
    const setFromEvent = (e) => setPosition({ x:
e.clientX, y: e.clientY });
    window.addEventListener("mousemove",
setFromEvent);

    return () => {
        window.removeEventListener("mousemove",
setFromEvent);
    };
}, []);
```



```
useEffect (() => {
    const setFromEvent = (e) => setPosition({ x:
e.clientX, y: e.clientY });
    window.addEventListener("mousemove",
setFromEvent);
}, []);
```



Both of the snippets above will provide the functionality required.



```
useCallback(() => {
    const setFromEvent = (e) => setPosition({ x:
e.clientX, y: e.clientY });
    window.addEventListener("mousemove",
setFromEvent);

    return () => {
        window.removeEventListener("mousemove",
setFromEvent);
    };
}, [])
```



None of the above

Question - 8 State Management

SCORE: 5 points

State Management Easy

Which change to the following code will cause it to increment *count* every second.

```
function Counter() {
  let [count, setCount] = useState(0);
  useEffect (() => {
    let id=setInterval(() => {
      setCount(count + 1);
    }, 1000);
    return () => clearInterval(id);
  }, []);
  return <h1>{count}</h1>;
}
```

- Replace line 5 with setCount(++count);
- Replace line 5 with setCount(prevCount+ 1);
- Replace line 5 with setCount(count++);
- Replace line 5 with setCount(prevCount => prevCount+ 1);
- None of the above

Question - 9 Components

SCORE: 5 points

Easy Class Components

This code is part of a React application.

```
const Home = () => {
  const [isLoading, setLoading] = useState(true);
  if(isLoading) {
    return <Loader />;
  }
  useEffect (() => { //fetchData }, []);
}
```

Which of the following statements is correct?

- The isLoading state has been initialized to TRUE, but it should be FALSE initially.
- An error will be thrown as the useEffect hook is called conditionally.
- The Loader component will always be shown, and the useEffect hook will not be executed.
- None of the above

Question - 10

SCORE: 5 points

React: True statements

React Front-End Development Easy

Which of the following statement(s) is true about ReactJS?

1. Only one root element can be returned per component.
2. Both arguments of the useEffect hook are compulsory.
3. The useState hook returns an object.
4. The useState hook cannot be used outside of a functional component.

- 1
- 2
- 3
- 4

Question - 11

SCORE: 5 points

React: Route

React Front-End Development Router Easy

```
import React from 'react';
import {BrowserRouter as Router, Switch, Route} from "react-router-dom";
import Home from "./Home";
import About from "./About";

function App() {
  return (
    <Router>
      <Switch>
        <Route path="/" component={Home} />
        <Route path="/about" exact component={About} />
      </Switch>
    </Router>
  )
}

export default App
```

What component will get rendered if the URL is "http://localhost:3000/about"?

- <Home/>
- <About />
- <Home /><About />
- No output

Question - 12

SCORE: 5 points

React: Children

What is the output?

```
import React from 'react'

function Test (props) {
  return (
    <div>
      <p>Hello {props.name}</p>
      <p>{props.children}</p>
    </div>
  );
}

export default function App () {
  return (
    <Test name="candidate" children="Frontend">
      <p>Welcome to Hackerrank!</p>
    </Test>
  )
}
```

- Hello candidate
Frontend
- Hello candidate
Welcome to Hackerrank!
- Hello candidate
undefined
- Error

Question - 13

React: Check statements

SCORE: 5 points

```
import React from 'react';
function Sample(props) {
  return (
    <>
    <div>
      <p>{props.name}</p> /* Statement 1 */
      <p>{props[designation]}</p> /* Statement 2 */
    </div>

    <div>
      <p>{props[0]}</p> /* Statement 3 */
      <p>{props['designation']}</p> /* Statement 4 */
    </div>
  </>
)
```

```
}  
export default Sample;
```

Which of the statement(s) will not generate an error? ('name' and 'designation' are the props passed to the <Sample /> from the App component)

- Statement 1
- Statement 2
- Statement 3
- Statements 4

Question - 14

SCORE: 5 points

React: Welcome

React | Front-End Development | Easy

```
import React from "react";  
function App() {  
  return (  
    <div>  
      <p>Hi</p>  
      <p>Welcome to Hackerrank</p>  
    </div>  
    <div>  
      <p>This is a react problem!</p>  
    </div>  
  );  
}  
export default App;
```

What is the output of the code snippet?

- Hi
Welcome to Hackerrank
- Hi
Welcome to Hackerrank
This is a react problem!
- This is a react problem!
- This code will generate an error.

Question - 15

SCORE: 5 points

React: Add class

Front-End Development | React | Classes | Easy

Which of the following code snippets can be used to dynamically add a class to a tag in ReactJS? Assume all imports and exports are there.

S1:

```
function App() {  
  const [state, setState] = useState(false);
```

```
return (
  <div>
    <button onClick={() => setState(!state)}>Click me!</button>
    <h1 className={state && "red-color"}>Hello</h1>
  </div>
);
}
```

S2:

```
function App() {
  const [state, setState] = useState(false);
  const color = "red-color";
  return (
    <div>
      <button onClick={() => setState(!state)}>Change color</button>
      <h1 className={color}>Hello</h1>
    </div>
  );
}
```

S3:

```
function App() {
  const [state, setState] = useState(false);
  return (
    <div>
      <button onClick={() => setState(!state)}>Click me!</button>
      <h1 className={state ? "red-color": "blue-color"}>Hello</h1>
    </div>
  );
}
```

S4:

```
function App() {
  const [state, setState] = useState(false);
  return (
    <div>
      <button onClick={() => setState(!state)}>Click me!</button>
      <h1 className="red-color">Hello</h1>
    </div>
  );
}
```

- S1
- S2
- S3
- S4

Question - 16

React: Hooks and Their Applications

SCORE: 5 points

React Hooks Easy

Match the commonly used React hooks and their applications.

Hook	Application
1. useState	a. Perform side effects on updates
2. useEffect	b. Returns memorized values
3. useContext	c. Used to track state
4. useMemo	d. Manage state globally

1.b
2.c
3.d
4.a

1.c
2.a
3.d
4.b

1.d
2.c
3.a
4.b

1.b
2.d
3.a
4.c

Question - 17

SCORE: 5 points

React: Styling in JavaScript

[React](#) [CSS3](#) [Easy](#) [Styling React](#)

Select the appropriate option to generate inline styles equivalent to the CSS stylesheet.

```
.my-style{
    background-color: blue;
    color: red;
    font-size: large;
    border: solid 10px black;
}
```

```
const MyComponent = () => {
    return (
        <div style="background-color: blue;
                    color:red;
                    font-size:large;
                    border:solid 10px black; ">
            My CSS Div
        </div>
    )
};
```

```
const MyComponent = () => {
    return (
        <div style={{background-color: "blue",
                     color:"red",
                     fontSize:"large",
                     border:"solid 10px black"}>
            My CSS Div
        </div>
    )
};
```

```
const MyComponent = () => {
    return (
        <div style={{background-color: "blue",
                     color:"red",
                     fontSize:"large",
                     border: "solid 10px black"}}>
            My CSS Div
        </div>
    )
};
```

```
const MyComponent = () => {
    return (
        <div style={'background-color': "blue",
                   'color':'red',
                   'fontSize':'large',
                   'border': "solid 10px black"}>
            My CSS Div
        </div>
    )
};
```

Question - 18

React: Valid Routes

SCORE: 5 points

React React Router Routes Easy

Which route is not valid for this React Router component?

```
<Routes>
  <Route path='/' element={<Home />} />
  <Route path='/user/:id' element={<User />} />
  <Route path='/user/:id/edit' element={<UserEdit />} />
  <Route path='/post/:id' element={<Post />} />
  <Route path='/posts' element={<Posts />} />
</Routes>
```

/user/1/edit

/post/10

/post /profile/12

SCORE: 5 points

Question - 19

React: Components and Routes

Which component will load when the Route '/signin' is requested from this React Router?

```
<BrowserRouter>
  <Routes>
    <Route path="/" element={<LandingPage />} />
    <Route path="/home" element={<HomePage />} />
    <Route path="/about" element={<AboutPage />} />
    <Route path="/contact" element={<ContactPage />} />
    <Route path="/login" element={<LoginPage />} />
    <Route path="/signup" element={<SignupPage />} />
    <Route path="*" element={<NotFoundPage />} />
  </Routes>
</BrowserRouter>
```

- LoginPage
- SignupPage
- NotFoundPage
- HomePage

Question - 20

SCORE: 5 points

React: Counter

```
const Counter = () => {
  const [number, setNumber] = React.useState(0);
  const incrementNumber = () => {
    setNumber(number + 1);
  };
  React.useEffect(() => setNumber(10), [number]);
  return (
    <div>
      Count: {number}
      <button onClick={() => incrementNumber()}>Increment Counter</button>
    </div>
  );
}
export default Counter;
```

The ReactJS Counter component is rendered as shown. The value of `{number}` is 10. What will be the value of `{number}` after clicking "Increment Counter" 3 times?

Count: 10

Increment Counter

- 15
- 13
- 10
- 0

Question - 21

SCORE: 5 points

React: Functional Components

React Easy Syntax

Which is the functional component that is equivalent to this React Class component?

```
class Hello extends React.Component{
  render() {
    const {name, age} = this.props;
    return(
      <div>
        Hello {name} is {age} years old.
      </div>
    )
  }
}

Hello.propTypes = {
  name: PropTypes.string,
  age: PropTypes.number
}

Hello.defaultProps = {
  name: 'David'
}

export default Hello;
```

```
function Hello({ name = 'David', age }) {
  return (
    <div>
      <p>Hello {name} is {age} years old</p>
    </div>
  );
}

Hello.propTypes = {
  name: PropTypes.string,
  age: PropTypes.number.isRequired
```

```
};  
export default Hello;
```

```
function Hello({ name, age }) {  
    return (  
        <div>  
            <p>Hello {name} is {age} years old</p>  
        </div>  
    );  
}  
Hello.propTypes = {  
    name: PropTypes.string,  
    age: PropTypes.number.isRequired  
};  
export default Hello;
```

```
function Hello({ name = 'David', age }) {  
    return (  
        <div>  
            <p>Hello {name} is {age} years old</p>  
        </div>  
    )  
}  
Hello.propTypes = {  
    name: PropTypes.string,  
    age: PropTypes.number.isRequired  
};  
export default Hello;
```

The Class component cannot be converted into a functional component.

Question - 22

React: States and Props

SCORE: 5 points

React Component State Management State Management Easy

Consider these React components as rendered below.

ScoreBoard.js

```
const ScoreBoard = () => {  
    const [score, setScore] = React.useState(0);  
    const [goal, setGoal] = React.useState(0);  
  
    const newScore = (event) => {  
        setScore(score + 1);  
        setGoal(goal + 1);  
    }  
    return (  
        <div>  
            <p>Score: {score}</p>  
            <p>Goal: {goal}</p>  
            <ScoreManager newScore={newScore} score={score} goal={goal} />  
        </div>  
    )  
}  
  
export default ScoreBoard;
```

```

const ScoreManager = (props, { score, goal}) => {
    const resetScore = (event) => {
        score = 0
        goal = 0
    }
    return (
        <div>
            <button onClick={props.newScore}> Add Score </button>
            <button onClick={resetScore}> Reset Score </button>
        </div>
    )
};
export default ScoreManager;

```

Output:

Score: 0

Goal: 0

Add Score
Reset Score

What will be the values of Score and Goal printed after clicking the 'Add Score' button 5 times and then clicking the 'Reset Score' button

- Score: 5
Goal: 5
- Score: 0
Goal: 0
- Score: 4
Goal: 4
- Score: 5
Goal: 0

Question - 23

SCORE: 5 points

React: Events

```

import React from 'react';
import PropTypes from 'prop-types';
import './Question2.css';

const GoalComponent = () => {
    const shoot = (message, event) => console.log(message);
    return (

```

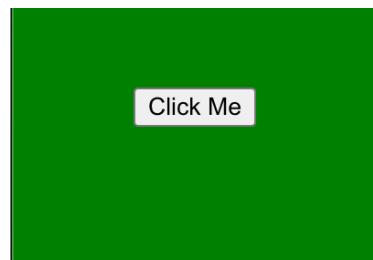
```

        <div className="Question2">
            <div className='main-div' onClick={(event) => shoot("No Goal", event)}>
                <button onClick={(event) => shoot("Goal", event)} >
                    Click Me
                </button>
            </div>
        </div>
    )
}

export default GoalComponent;

```

The given React component renders as shown below.



What is logged to the console when "Click Me" is clicked?

- Goal
- No Goal
- Goal
No Goal
- No Goal
Goal

Question - 24 Render Function

SCORE: 5 points

[Easy](#) [React](#) [React Component Lifecycle](#)

Which of the following functions gets invoked after the render() function when `state` or `props` is updated?

- componentWillMount()
- componentDidMount()
- componentWillReceiveProps()
- componentDidUpdate()

Question - 25 Method Search

SCORE: 5 points

[Easy](#) [React](#) [React Component Lifecycle](#)

Which of the following methods is/are invoked when there is an error during rendering in the React lifecycle?

- getDerivedStateFromError()
- componentDidCatch()
- Both A and B.
- None of the above

Question - 26

SCORE: 5 points

Wrap Code

Easy

React

Assuming options state values are given in the constructor, which code should wrap the components that are going to have access to the context inside a class component?

- <NotesContext.Provider value={this.state.notes}> //code </NotesContext.Provider>
- <NotesContext value={this.state.notes}> //code </Notes.Provider>
- <NotesContext.Provider value={this.state.notes}> //code <Notes.Provider/>
- <NotesContext.Provider value={this.state.notes}/> //code <Notes.Provider>

Question - 27

SCORE: 5 points

Submit

Easy

React

What element type does this render?

```
function Music() {  
  return <span>Tiesto - Surrounded by Light</span>;  
}  
  
ReactDOM.render(<Music/>, document.getElementById('root'));
```

- div
- span
- Component
- None above

Question - 28

SCORE: 5 points

Hooks

Which is the equivalent code using hooks?

```
import React, { Component } from 'react'
export default class SampleComponent extends Component {
  componentDidMount() {
    //
  }
  render() {
    return (<div>Hello</div>)
  }
}
```

- import React, { useEffect } from 'react'
 const SampleComponent = () => {
 useEffect(() => {
 //
 }, [this]);
 return ('Hello')
 }
 export Component
- import React, { useEffect } from 'react';
 Default const SampleComponent= () => { Effect(() => { {...} }, []); return ('Hello') } export SampleComponent
- import React, { useEffect } from 'react';
 const SampleComponent = () => {
 useEffect(() => { //, []); return ('Hello');
 } export SampleComponent
- None above

Question - 29

Click 3

SCORE: 5 points

What is displayed in H1 when after a user clicks the button 3 times?

```
import React, { useState } from 'react';
export default function App() {
  const [clicked, setClicked] = useState(3);
  return (
    <div className="App">
      <button onClick={() => setClicked((clicked - 1) * 2)}>
        Click Me
      </button>
      <h1>{clicked}</h1>
    </div>
  );
}
```

- 5
- 6
- 14
- 10

Question - 30 Science Project

SCORE: 5 points

Easy React

Which of the following is a valid syntax to use the variable inside a component?

```
const SkyColor = "Blue";
```

- <Uppersky className="Space_Details">\${Skycolor}</Uppersky>
- <Uppersky className="Space_Details"><Skycolor></Skycolor> </Uppersky>
- <Uppersky className="Space_Details" class="SkyColor"></Uppersky>
- <Uppersky className="Space_Details">{SkyColor}</Uppersky>

Question - 31 Hello

SCORE: 5 points

React React Component Easy

What is the output generated by the App component?

App.js

```
import Component from './Component';
function App() {
  return(
    <>
      <Component title = "Hello"/>
      <Component title = "Everyone"/>
      <Component title = "Good Morning"/>
    </>
  );
}
export default App;
```

Component.js

```
export default function Component(props) {
  return(
    <div>
      <h1>{props.title}</h1>
    </div>
  );
}
```

```
) ;  
}
```

- Hello
Hello
Hello
- Hello
Everyone
Good Morning
- This code wouldn't compile
- Hello
Exception thrown

Question - 32

SCORE: 5 points

React State

React

Easy

Which option replaces "//insert code" to update the state of a component multiple times with `newState` function calls?

```
export default class Game extends React.Component{  
  constructor(props){  
    super(props);  
    this.state = { name : "Peter" };  
    this.newState = this.newState.bind(this)  
  }  
  newState(){  
    //insert code  
  }  
}
```

- this.setState="David";
- this.setChangeState({name:"David"})
- this.setState({name:"David"})
- Both A and B

Question - 33

SCORE: 5 points

Name

React

React Component

Easy

Assuming this component is imported and used on a page, what is its output?

```
import React, { Component } from 'react';  
class App extends Component {
```

```

constructor() {
  super();
  this.state={name:"peter"}
}
render() {
  return (
    <div>
      {this.state.name}
    </div>
  )
}
} export default App

```

- This code will not compile.
- Error
- Peter
- peter

Question - 34

Clock

SCORE: 5 points

Easy React React Component Lifecycle

This component is used in a page where a div tag with root ID exists. What is the output of the following code?

```

import React from 'react';
import ReactDOM from 'react-dom';
export default class Clock extends React.Component {
  constructor(props) {
    super(props);
    this.state = { time : new Date() };
  }
  render() {
    return (
      <div><h1>{ this.props.title } !</h1>
      <h2>{this.state.time}</h2></div>;
    )
  }
}
ReactDOM.render(
  <Clock title="ThisisMyClock" />,
  document.getElementById('root')
);

```

- {CurrentTimeinFormat} ThisisMyClock
- This code will not compile.
- ThisisMyClock {CurrentTimeinFormat}
- None of above

Question - 35

SCORE: 5 points

Easy React

The parameter *year* is passed as a prop. What code replaces "//CODE HERE" to complete the function?

```
let LeapYear=(props)=>{
  //CODE HERE
  if((year % 4 === 0 && year % 100 !== 0) || year % 400 === 0) {
    return <p>{year} is a leap year.</p>
  }else{
    return <p>{year} is not a leap year.</p>
  }
}
export default LeapYear
```

- let year;
- let year = props.year;
- year = props.year;
- let props.year;

Question - 36

Attribute Access

SCORE: 5 points

 Easy React

Which option will access attributes of the CSS file at "./mystyle.module.css"?

```
.TextDesign {
  colour: Blue;
  padding: 40px;
  font-family: Arial;
  text-align: centre;
}
```

- import React from 'react';
 import ReactDOM from 'react-dom';
 import styles from './mystyle.module.css';
 class TextColor extends React.Component {
 render() {
 return <h1 className=styles>Hello I am a text!</h1>
 }
 }
 export default TextColor;
- import React from 'react';
 import ReactDOM from 'react-dom';
 import styles from './mystyle.module.css';
 class TextColor extends React.Component {

```
render() {
  return <h1 id={styles.color}>Hello I am a text!</h1>;
}
}
export default TextColor;
```

import React from 'react';
import ReactDOM from 'react-dom';
import styles from './mystyle.module.css';
class TextColor extends React.Component {
 render() {
 return <h1 className={Textdesign.color}>Hello I am a text!</h1>;
 }
}
export default TextColor;

import React from 'react';
import ReactDOM from 'react-dom';
import styles from './mystyle.module.css';
class TextColor extends React.Component {
 render() {
 return <h1 className={styles.TextDesign}>Hello I am a text!</h1>;
 }
}
export default TextColor;

Question - 1
git describe

SCORE: 5 points

 Git Easy

`git describe <commit-id>` describes the commit against

- the HEAD.
- the nearest branch.
- the nearest tag.
- the latest commit of the main branch.

Question - 2
git squash

SCORE: 5 points

 Git Easy

Which command(s) will squash the last 3 commits into one commit? Pick all that apply.

- git rebase -i HEAD~3 ; In the screen that opens up, change "pick" to "squash" for the 2 commits before the latest commit.
- git rebase -i HEAD~3 ; In the screen that opens up, change "pick" to "fixup" for the 2 commits before the latest commit.
- git reset --soft HEAD~3 && git commit
- git squash 3

Question - 3
git status

SCORE: 5 points

 Git Easy

Based on the output of the 'git status' command that is shown, which of the following statements is true?

```
git status
On branch newbranch
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

    modified: README.md

Changes not staged for commit:
```

```
(use "git add <file>..." to update what will be committed)
(use "git checkout -- <file>..." to discard changes in working directory)
```

modified: README.md

- There are 2 files with the name README.md.
- `git reset --soft HEAD~` was executed and the last commit added the REAMDE.md file.
- `git reset --mixed HEAD~` was executed and the last commit added the REAMDE.md file.
- `git reset --hard HEAD~` was executed and the last commit added the REAMDE.md file.
- `git add README.md` was executed and then another change was made to the README.md file.

Question - 4

SCORE: 5 points

Clone a Git Repo

Git

Easy

Which command(s) will clone a Git repository with submodules? Select all that apply.

- git clone --recurse-submodules https://github.com/cameronmcnz/surface.git
- git clone --recursive https://github.com/cameronmcnz/surface.git
- git clone https://github.com/cameronmcnz/surface.git ; git submodule init; git submodule update --recursive
- git clone https://github.com/cameronmcnz/surface.git; git fetch --all --recursive.
- git clone https://github.com/cameronmcnz/surface.git ;git submodule update --init --recursive

Question - 5

SCORE: 5 points

How Many Branches?

Git

Easy

You have just cloned a remote repository to your local disk. The remote repository has 5 branches. How many branches does your local repository have?

- 5
- 6
- 10
- 15

Question - 6

SCORE: 5 points

Conditional Coverage

XCode

Code Coverage

Hard

Unit tests for a WeatherForecast class are being enhanced. This includes a conditional operation depending on the temperature range. A test case is needed that improves code coverage and ensures that branches in the forecastDescription method are tested.

Consider the following Swift snippet:

```
class WeatherForecast {
    func forecastDescription(temperature: Double) -> String {
        if temperature < 0 {
            return "Freezing conditions expected."
        } else if temperature >= 0 && temperature < 15 {
            return "Chilly weather ahead."
        } else if temperature >= 15 && temperature < 25 {
            return "Mild temperatures for the day."
        } else {
            return "Heatwave conditions imminent."
        }
    }
}
```

The current test suite has one test case for the "Mild temperatures for the day." scenario. Which of the following unit test snippets correctly increases the code coverage by testing the untested branches?



```
func testForecastForFreezing() {
    let forecast = WeatherForecast()
    XCTAssertEqual(forecast.forecastDescription(temperature: -5), "Freezing
conditions expected.")
}

func testForecastForHeatwave() {
    let forecast = WeatherForecast()
    XCTAssertEqual(forecast.forecastDescription(temperature: 30), "Heatwave
conditions imminent.")
}
```



```
func testForecastRange() {
    let forecast = WeatherForecast()
    let description = forecast.forecastDescription(temperature: -5)
    let containsFreezing = description.contains("Freezing")
    let containsHeatwave = description.contains("Heatwave")

    XCTAssertTrue(containsFreezing || containsHeatwave)
}
```



```
func testForecastBelowFreezing() {
    let forecast = WeatherForecast()
    let description = forecast.forecastDescription(temperature: -1)
    XCTAssertEqual(description, "Freezing conditions expected.")
}

func testForecastAboveHeatwave() {
    let forecast = WeatherForecast()
    let description = forecast.forecastDescription(temperature: 25)
    XCTAssertEqual(description, "Heatwave conditions imminent.")
}
```

```

func testForecastAtThresholds() {
    let forecast = WeatherForecast()
    let descriptions = [
        forecast.forecastDescription(temperature: -0.1),
        forecast.forecastDescription(temperature: 14.9),
        forecast.forecastDescription(temperature: 24.9)
    ]
    XCTAssertEqual(descriptions, ["Freezing conditions expected.", "Chilly weather
ahead.", "Mild temperatures for the day."])
}

```

Question - 7

Unit Testing

SCORE: 5 points

[QA](#) [Medium](#) [Testing](#) [SDET](#)

Select one or more advantages of writing *unit tests*:

- Simplifies debugging by uncovering bugs early in development
- Speeds development by simplifying integration
- Improves design as part of test-driven development
- Detects new bugs during regression testing

Question - 8

JUnit Multiple When Usage

SCORE: 5 points

[Java](#) [JUnit](#) [Mockito](#) [Easy](#)

Consider the following code block

```

import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.Test;

import java.util.ArrayList;
import java.util.List;

import static org.junit.jupiter.api.Assertions.assertEquals;
import static org.mockito.Mockito.*;

public class JUnitWhenMultipleUsage {

    private List<String> nameList;

    @BeforeEach
    public void init() {
        nameList = mock(ArrayList.class);
    }

    @Test
    public void testWithMockedArrayList() {
        when(nameList.size()).thenReturn(10).thenReturn(20).thenReturn(30).thenReturn(40).thenReturn(41);
        assertEquals(X, nameList.size());
        assertEquals(Y, nameList.size());
    }
}

```

```
        assertEquals(Z, nameList.size());  
  
        verify(nameList, T).size();  
    }  
}
```

Which of the following *X*, *Y*, *Z*, and *T* values, when applied, allow the *testWithMockedArrayList* method to pass the test?

X = 41

Y = 41

Z= 41

T = atLeastOnce()

X = 41

Y = 41

Z= 41

T = times(3)

X = 10

Y = 20

Z= 30

T = times(3)

X = 41

Y = 41

Z= 41

T = atLeast(3)

Question - 9

SCORE: 5 points

Mockito Inject Mock

JUnit Mockito Easy

Which of the following annotations can be used to inject mock attributes into the test object automatically?

@Inject

@MockInjects

@InjectMocks

@Mocks

Question - 10

SCORE: 5 points

Mockito Solution

JUnit Mockito Easy

```

@Service
public class DoctorServiceImpl {

    private DoctorRepository doctorRepository;
    private DoctorMapper doctorMapper;

    public DoctorServiceImpl(DoctorRepository doctorRepository,
                           DoctorMapper doctorMapper) {
        this.doctorRepository = doctorRepository;
        this.doctorMapper = doctorMapper;
    }

    public DoctorDto save(String name, String speciality, Double hourlyRate) {
        Doctor doctor = new Doctor();
        doctor.setName(name);
        doctor.setSpeciality(speciality);
        doctor.setHourlyRate(hourlyRate);

        doctorRepository.save(doctor);
        DoctorDto dto = doctorMapper.entityToDto(doctor);
        return dto;
    }
}

```

DoctorServiceTest.java

```

//annotation here
public class DoctorServiceTest {

    @InjectMocks
    private DoctorServiceImpl doctorService;

    @Mock
    private DoctorRepository doctorRepository;

    @Mock
    private DoctorMapper doctorMapper;

    @Test
    void givenDoctor_whenSave_thenCheckIfDoctorSaved() {
        //given
        String name = "doctor bambam";
        String speciality = "bambam";
        Double hourlyRate = Double.MIN_VALUE;
        //when
        doctorService.save(name, speciality, hourlyRate);
        //
        verify(doctorRepository, times(1)).save(any(Doctor.class));
    }
}

```

To ensure DoctorServiceTest successfully runs and the test passes, what annotation should be used?

- @Test
- @ExtendWith(MockitoExtension.class)
- @RunWith(JUnitPlatform.class)
- None of the above

Question - 11
JUnit Test Order

SCORE: 5 points

```
//annotation 1 here
public class HackerRankTest {
    private static StringBuilder test = new StringBuilder("");
    @Test
    //annotation 2
    public void hack() {
        test.append("Hack");
    }
    @Test
    //annotation 3
    public void rank() {
        test.append("Rank");
    }
    @Test
    //annotation 4
    public void er() {
        test.append("er");
    }
    @AfterAll
    public static void assertOutput() {
        assertEquals(test.toString(), "HackerRank");
    }
}
```

Which of the following annotation usages would pass the test with success?

- annotation 1 -> @TestMethodOrder(MethodOrderer.Random.class)
annotation 2 -> @Order(1)
annotation 3 -> @Order(2)
annotation 4 -> @Order(3)
- annotation 1 -> @TestMethodOrder(MethodOrderer.OrderAnnotation.class)
annotation 2 -> @Order(1)
annotation 3 -> @Order(2)
annotation 4 -> @Order(3)
- annotation 1 -> @TestMethodOrder(MethodOrderer.OrderAnnotation.class)
annotation 2 -> @Order(1)
annotation 3 -> @Order(3)
annotation 4 -> @Order(2)
- None of the above

Question - 12

Spring Integration Test MockMvc

SCORE: 5 points

```
import static org.springframework.test.web.servlet.result.MockMvcResultMatchers.status;
import static org.hamcrest.Matchers.containsStringIgnoringCase;
import static org.junit.Assert.assertEquals;
import static org.springframework.test.web.servlet.request.MockMvcRequestBuilders.get;
import static org.springframework.test.web.servlet.result.MockMvcResultHandlers.print;
import static org.springframework.test.web.servlet.result.MockMvcResultMatchers.content;
import static org.springframework.test.web.servlet.result.MockMvcResultMatchers.status;
import org.junit.jupiter.api.Test;
```

```

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.test.autoconfigure.web.servlet.AutoConfigureMockMvc;
import org.springframework.boot.test.context.SpringBootTest;
import org.springframework.test.web.servlet.MockMvc;
import org.springframework.test.web.servlet.MvcResult;

@SpringBootTest
@AutoConfigureMockMvc
public class HackerRankIntegrationTest {

    @Autowired
    private MockMvc mockMvc;

    @Test
    public void shouldReturnDefaultMessage() throws Exception {
        MvcResult mvcResult = this.mockMvc.perform(get("/user/listUsers"))
            .andDo(print())
            .andExpect(status().isOk())
            .andExpect(content().string(containsStringIgnoringCase("Hacker Rank Rock")))
            .andReturn();

        assertEquals("application/json", mvcResult.getResponse().getContentType());
    }
}

```

Assume all the following responses are from "/hacker/rank". Which of them may pass the test?

- {"data":{ "key":"Hacker", value:" Rank rocks"}}
- {"data":{ "key":"Hacker Rank", value:"rocks Hacker rocks Rank"}}
- {"data":{ "key":"Hacker Rank", value:"rocks"}}
- {"data":{ "key":"hacker Rank Rocks", value:" Rank rocks"}}

**Question - 1****Kubernetes Run Command****SCORE: 5 points****Easy** Kubernetes

After setting up a Kubernetes cluster, you want to run the package manager update process in a particular pod. How this can be achieved?

- `kubectl run pod/frontend-controller-01 --cmd="apt-get update"`
- `kubectl exec pod/frontend-controller-01 --cmd="apt-get update"`
- `kubectl run pod/frontend-controller-01 -- apt-get update`
- `kubectl exec pod/frontend-controller-01 -- apt-get update`

Question - 2**Kubernetes Find Documentation****SCORE: 5 points****Easy** Kubernetes

While refactoring an existing Kubernetes cluster, you want to create a new service but you have forgotten the resource schema. How can you get a short explanation of a specific resource definition?

- `kubectl explain service`
- `kubectl help service`
- `kubectl describe service`
- `kubectl expose service`

Question - 3**Kubernetes Basic Pod****SCORE: 5 points**

Kubernetes Easy

As the next part of your Kubernetes cluster maintenance, you want to test that everything still works properly. For a quick check, you want to execute a test image run. What is the right command?

- `kubectl exec --image=hello-world test`
- `kubectl exec --rm -i --image=hello-world --restart=Never test`
- `kubectl create image hello-world`
- `kubectl run --rm -i --image=hello-world --restart=Never test`

Question - 1**SCORE: 50 points****Git: Feature Removal from a Development Branch****DevOps** **Git** **Easy** **Git Basic Commands** **Git Log** **Git Branching**

In software development, managing features through version control is critical to project management and workflow efficiency. Sometimes, a feature must be removed, either because it is no longer needed, deprecated, or being reworked. This task involves working with branches in Git to ensure that changes are made in the appropriate context without affecting the stable version of the project.

For this task, within an existing project repository, the objective is to remove a specific feature (represented by the file "feature.module") in a development branch that will be created from the current master branch. This approach allows for isolated development and testing without impacting the master branch. After the feature removal, the changes should be committed to the development branch with a specific commit message and then pushed to the remote repository.

Using the existing project repository located at `/home/ubuntu/1792332-git-feature-removal-from-a-development-branch`:

- Check out the current master branch to ensure it is up to date.
- Create a new branch named "development" from the master branch.
- In the "development" branch, remove the file "feature.module".
- Commit the removal of "feature.module" with the commit message "REQUEST-15: Remove feature".
- Push the "development" branch to the origin remote repository as "development".

An example of the desired output of `git status`:

```
On branch development
Your branch is up to date with 'origin/development'.

nothing to commit, working tree clean
```

An example of the desired output of `git log --name-status`:

```
commit 5a89545f744f25a72328d31cf494b4048dd701cd (HEAD -> development, origin/development)
Author: Hacker Developer <hacker.developer@hackercompany.com>
Date:   Sun Jun 9 16:23:10 2024 +0000

    REQUEST-15: Remove feature

D    feature.module

commit 0f6f2c1905ac801c92a4c1e7ce1e4a2dc859e8 (origin/master, master)
Author: Hacker Developer <hacker.developer@hackercompany.com>
Date:   Sun Jun 9 16:18:17 2024 +0000

    FEATURE-1: Feature implementation

A    feature.module

commit df5e78cf6d4d934e81bf02c1c5f1c4e6100f48a2
Author: Hacker Developer <hacker.developer@hackercompany.com>
Date:   Sun Jun 9 16:18:17 2024 +0000

    TASK-1: Project initialization

A    core.module
```

Question - 2

SCORE: 50 points

Git: Amending the Last Commit Message

DevOps Git Easy Git Basic Commands Git Log Git Amend

In the realm of software development, especially within projects utilizing continuous integration and continuous delivery (CI/CD) systems, the structure and content of commit messages can be critical. Certain CI/CD pipelines are configured to trigger or skip steps based on specific keywords or identifiers within commit messages. Occasionally, a commit may be pushed without the necessary identifiers, necessitating a quick correction to ensure the integrity of the automated workflows.

For this task, within an existing project repository, the objective is to amend the last commit message by appending a specific task ID that was inadvertently omitted. This correction is vital for maintaining the seamless operation of the CI/CD pipeline.

Using the existing project repository located at </home/ubuntu/1792055-git-amending-the-last-commit-message>:

- Identify the last commit message.
- Amend the last commit message to append the task ID, transforming the format from "Module A implementation" to "TASK-2: Module A implementation".
- Push the amended commit to the remote repository, taking care to preserve the continuity of the project history and the CI/CD pipeline.

An example of the desired output of `git status`:

```
On branch master
Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean
```

An example of the desired output of `git log --name-status`:

```
commit 92c3efc596fa3f8ec7a8c142158a18d2b7718184 (HEAD -> master, origin/master)
Author: Hacker Developer <hacker.developer@hackercompany.com>
Date:   Sun Jun 9 12:01:54 2024 +0000

    TASK-2: Module A implementation

A    a.module

commit db5ef16f152eb1000b33e36701748c5265148678
Author: Hacker Developer <hacker.developer@hackercompany.com>
Date:   Sun Jun 9 12:01:54 2024 +0000

    TASK-1: Project initialization

A    core.module
```

Question - 3

SCORE: 50 points

Git: Repository Initialization and First Commit

DevOps Git Easy Git Basic Commands Git Config Git Log

In the early stages of a software development project, setting up a version control system is crucial for tracking changes, collaborating with team members, and maintaining the project's overall integrity. Git, a distributed version control system, offers a robust framework for managing a project's evolving codebase.

For this task, the goal is to initialize a new Git repository, configure user identity, add all existing files in the project to the repository, and make the first commit.

Using the local project directory named </home/ubuntu/1792002-git-repository-initialization-and-first-commit>:

- Initialize the directory as a Git repository.
- Configure the Git user name and email.
- Add all files and folders in the directory to the staging area, preparing them for the first commit.
- Commit the added files with the commit message "Initial project setup".

An example of the desired output of `git status`:

```
On branch master
nothing to commit, working tree clean
```

An example of the desired output of `git log --name-status`:

```
commit e978b16248473a2a7c05c2f32306d626baa1c099 (HEAD -> master)
Author: User Name <user.email@domain.example>
Date:   Sun Jun 9 06:28:14 2024 +0000

    Initial project setup

A  README.md
A  core.module
A  modules/a.module
A  modules/b.module
```

Question - 4

Git: Initial Commit

SCORE: 50 points

[Git](#) [DevOps](#) [Git Config](#) [Git Add](#) [Git Commit](#) [Git Push](#) [Easy](#)

You are working on the application development process and need to commit your changes to Git.

Using the existing Git repository "/home/ubuntu/1326005-git-initial-commit":

- Set up a Git username at the repository level (not globally!), set it to "Hacker Developer".
- Set up a Git email address at the repository level (not globally!), set it to "hacker.developer@hackercompany.com".
- Commit all available files in "/home/ubuntu/1326005-git-initial-commit" directory to the Git repository with the message "Initial implementation"
- Push all to the remote origin

Note:

- The completed solution will be evaluated in a new, clean environment. ONLY CHANGES IN "/home/ubuntu/1326005-git-initial-commit" WILL BE CARRIED TO THE NEW ENVIRONMENT. ALL CHANGES OUTSIDE THIS DIRECTORY WILL BE LOST.

Question - 5

Git: Setup User Identity

SCORE: 50 points

[Git](#) [DevOps](#) [Easy](#) [Git Config](#)

You are working on the application development process and need to set up your Git identity.

Using the existing Git repository "/home/ubuntu/1325993-git-setup-user-identity":

- Set up a Git username at the repository level (not globally!), set it to "Hacker Developer".
- Set up a Git email address at the repository level (not globally!), set it to "hacker.developer@hackercompany.com".

Note:

- The completed solution will be evaluated in a new, clean environment. ONLY CHANGES IN "/home/ubuntu/1325993-git-setup-user-identity" WILL BE CARRIED TO THE NEW ENVIRONMENT. ALL CHANGES OUTSIDE THIS DIRECTORY WILL BE LOST.

Question - 6

SCORE: 5 points

Git

Easy

Based on the output of the 'git status' command that is shown, which of the following statements is true?

```
git status
On branch newbranch
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

    modified: README.md

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified: README.md
```

- There are 2 files with the name README.md.
- `git reset --soft HEAD~` was executed and the last commit added the REAMDE.md file.
- `git reset --mixed HEAD~` was executed and the last commit added the REAMDE.md file.
- `git reset --hard HEAD~` was executed and the last commit added the REAMDE.md file.
- `git add README.md` was executed and then another change was made to the README.md file.

Question - 7

SCORE: 5 points

git describe

Git

Easy

`git describe <commit-id>` describes the commit against

- the HEAD.
- the nearest branch.
- the nearest tag.
- the latest commit of the main branch.

Question - 8

SCORE: 5 points

git squash

Git

Easy

Which command(s) will squash the last 3 commits into one commit? Pick all that apply.

- git rebase -i HEAD~3 ; In the screen that opens up, change "pick" to "squash" for the 2 commits before the latest commit.
- git rebase -i HEAD~3 ; In the screen that opens up, change "pick" to "fixup" for the 2 commits before the latest commit.
- git reset --soft HEAD~3 && git commit
- git squash 3

Question - 9 Clone a Git Repo

SCORE: 5 points

Git Easy

Which command(s) will clone a Git repository with submodules? Select all that apply.

- git clone --recurse-submodules https://github.com/cameronmcnz/surface.git
- git clone --recursive https://github.com/cameronmcnz/surface.git
- git clone https://github.com/cameronmcnz/surface.git ; git submodule init; git submodule update --recursive
- git clone https://github.com/cameronmcnz/surface.git; git fetch --all --recursive.
- git clone https://github.com/cameronmcnz/surface.git ;git submodule update --init --recursive

Question - 10 How Many Branches?

SCORE: 5 points

Git Easy

You have just cloned a remote repository to your local disk. The remote repository has 5 branches. How many branches does your local repository have?

- 5
- 6
- 10
- 15

Question - 11 Git Languages

SCORE: 5 points

Git Easy

Which language(s) are used to build git?

- Java
- C
- Perl

Question - 12

SCORE: 5 points

Git Data Structure**Git Hard Hard**

Which data structure is git modelled after? In other words, when you look under the hood, which data structure does git resemble?

- a queue
- a linked list, every commit links to its parent
- a stack
- a hash or a key-value store
- an array

Question - 13

SCORE: 5 points

Remove Sensitive Info**Git Hard**

You have accidentally pushed a passwords.txt to your git repository. How do you remove this password from the git repo safely, so it can never be seen by anybody else. Select all correct answers.

- Execute `git reset --hard HEAD~` and do a force push, which removes the commit from the repo.
- Revert the commit using `git revert` and git push.
- Use the tool BFG repo cleaner.
- Use the git branch-filter command to remove unwanted data.
- Use the git filter-repo tool

Question - 14

SCORE: 5 points

HEAD^2**Git Hard Hard**

Consider the output of the git log command.

```
*   dcef518 (HEAD -> master, newbranch) Merge branch 'newbranch'  
|\ \  
| * 0824c9e adding index.html  
* | 6c50d08 adding about.html
```

| /

```
* 80be5ff new commit to newbranch  
* 98bf46c Adding more content  
* 00b3edf Initial Commit
```

On this repo, which commit is checked out when the following command is executed?

```
git checkout HEAD^2
```

- 80be5ff
- 98bf46c
- 00b3edf
- 0824c9e
- dcef518

Question - 15 Delete a Remote Branch

SCORE: 5 points

Hard

Git

Which of the following commands can you use to delete a remote/upstream branch *hotfix1* in git? Select all that apply.

- git branch -D hotfix1
- git push origin --delete hotfix1
- git push origin :hotfix1
- git push origin -d hotfix1
- git branch --delete hotfix1

Question - 16 HEAD~5

SCORE: 5 points

Git

Hard

Hard

Consider the output of the git log command.

```
* dcef518 (HEAD -> master, newbranch) Merge branch 'newbranch'  
|\ \\\  
| * 0824c9e adding index.html  
* | 6c50d08 adding about.html
```

```
| /  
* 80be5ff new commit to newbranch  
* 98bf46c Adding more content  
* 00b3edf Initial Commit
```

On this repo, which commit is checked out when the following command is executed?

```
git checkout HEAD~5
```

- 80be5ff
- 98bf46c
- 00b3edf
- 0824c9e
- dcef518

Question - 17 Branch Names

SCORE: 5 points

Git Easy

Which of the following are valid branch names?

- new..branch
- new branch
- new_branch
- new/branch
- .newbranch
- /new_branch

Question - 18 Git Blame

SCORE: 5 points

Git Hard

Which statements are true about git blame?

- Identifies a particular commit.
- Tells us who modified each line in a file and which commit was responsible for the changes.
- Shows the lines that were deleted or replaced.



All of these.

Question - 19

File Commits

SCORE: 5 points

Git

Hard

You have recently committed the file *LearningGit.c*. This is your 7th commit. Find the difference between your 2nd and 4th commit. Choose all that apply.

- git diff head^^ head^^^^ LearningGit.c
- git diff head~2 head~4 LearningGit.c
- git diff head~5 head~3 LearningGit.c
- git diff head^^^^^ head^^^ LearningGit.c