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State	Finished
Completed on	Sunday, 29 December 2024, 23:23
Time taken	6 hours 11 mins
Grade	92.00 out of 100.00

Question 1

Correct

Mark 2.00 out of 2.00

What does the Math.random() method in Java return?

Select one:

- a. A random floating-point number between 0 (inclusive) and 1 (exclusive). ✓
- b. A random floating-point number between 0 (exclusive) and 1 (inclusive).
- c. A random integer between 0 (exclusive) and 1 (inclusive).
- d. A random integer between 0 (inclusive) and 1 (exclusive).

Your answer is correct.

The correct answer is:

A random floating-point number between 0 (inclusive) and 1 (exclusive).

Question 2

Correct

Mark 2.00 out of 2.00

Which of the following variable declarations is NOT valid in Java?

Select one:

- a. char grade = 'A';
- b. boolean isTrue = true;
- c. double 3.14 = 3.14; ✓
- d. int number = 42;

Your answer is correct.

The correct answer is:

double 3.14 = 3.14;

Question 3

Correct

Mark 2.00 out of 2.00

How can you combine multiple conditions in an if-statement in Java?

Select one:

- a. Using the 'and' keyword
- b. Using the 'or' keyword
- c. Using logical operators such as && and || ✓
- d. Using logical operators such as %% and //

Your answer is correct.

The correct answer is:

Using logical operators such as && and ||

Question 4

Correct

Mark 2.00 out of 2.00

In Java, can an if-statement be nested inside another if-statement?

Select one:

- a. No, but you can use the else-if-statement for alternative conditions.
- b. Yes, there is no limit to the level of nesting. ✓
- c. No, nested if statements are not allowed in Java.
- d. Yes, but only one level of nesting is allowed.

Your answer is correct.

The correct answer is:

Yes, there is no limit to the level of nesting.

Question 5

Correct

Mark 2.00 out of 2.00

How many times will the following for loop execute?

```
for (int i = 0; i < 5; i++) {  
    // Loop body  
}
```

Select one:

- a. 0 times
- b. 4 times
- c. infinitely
- d. 5 times ✓

Your answer is correct.

The correct answer is:

5 times

Question 6

Correct

Mark 2.00 out of 2.00

Which statement is used to execute a block of code repeatedly as long as a specified condition is true?

Select one:

- a. if
- b. while ✓
- c. switch
- d. for

Your answer is correct.

The correct answer is:

while

Question 7

Incorrect

Mark 0.00 out of 2.00

What does the following Java code print to the console?

```
int x = 5;
if (x > 10) {
    System.out.println("A");
} else if (x > 2) {
    System.out.println("B");
} else {
    System.out.println("C");
}
```

Select one:

- a. A
- b. The code will not produce any output
- c. B
- d. C ✗

Your answer is incorrect.

The correct answer is:

B

Question 8

Correct

Mark 10.00 out of 10.00

Look at the code below, read it and then complete the code description below by filling in the spaces.

```
public class LoopExample {
    public static void main(String[] args) {
        int sum = calculateSum(5);
        System.out.println("The sum of numbers from 1 to 5 is: " + sum);
    }

    public static int calculateSum(int n) {
        int sum = 0;
        for (int i = 1; i <= n; i++) {
            sum += i;
        }
        return sum;
    }
}
```

This is a Java code snippet uses a for loop within the method `calculateSum` ✓ to calculate the sum of several numbers. The method takes an integer parameter named `n` ✓ and initializes a variable `sum` ✓ to store the result. It then iterates through a for loop that starts from `1` ✓ , continues as long as `i` ✓ is less than or equal to `n` ✓ , and incremented by `1` ✓ in each iteration. Inside the loop, it adds the value of `i` ✓ to `sum` ✓ . The method returns the final result of `sum` equals to `15` ✓ .

Question 9

Correct

Mark 2.00 out of 2.00

What is the purpose of the "this" keyword in Java?

Select one:

- a. Refers to the child class
- b. Refers to the parent class
- c. Refers to a static variable
- d. Refers to the current object ✓

Your answer is correct.

The correct answer is:

Refers to the current object

Question 10

Correct

Mark 2.00 out of 2.00

What is the index of the last element in a Java array?

Select one:

- a. length - 1 ✓
- b. length
- c. size - 1
- d. size

Your answer is correct.

The correct answer is:

length - 1

Question 11

Incorrect

Mark 0.00 out of 2.00

Which OOP principle emphasizes bundling data and methods that operate on the data within a single unit, known as a class?

Select one:

- a. Encapsulation
- b. Composition
- c. Aggregation
- d. Abstraction ✗

Your answer is incorrect.

The correct answer is:

Encapsulation

Question 12

Correct

Mark 2.00 out of 2.00

Can method overloading be based solely on the return type in Java?

Select one:

- a. No, method overloading is not allowed in Java.
- b. Yes, as long as the parameter names are different.
- c. No, the return type alone is not sufficient for overloading. ✓
- d. Yes, as long as the parameter types are the same.

Your answer is correct.

The correct answer is:

No, the return type alone is not sufficient for overloading.

Question 13

Correct

Mark 2.00 out of 2.00

Which of the following is a valid example of method overloading?

Select one:

- a. int add(int a, int b) {} and int add(int x, int y) {}
- b. double add(int a, int b) {} and double add(double a, double b) {} ✓
- c. int add(int a, int b) {} and double add(int a, int b) {}
- d. double add(int x, int y) {} and int add(int a, int b) {}

Your answer is correct.

The correct answer is:

double add(int a, int b) {} and double add(double a, double b) {}

Question 14

Correct

Mark 2.00 out of 2.00

In Java, what is the scope of a local variable declared inside a method?

Select one:

- a. It is accessible in all methods of any class in the same package.
- b. It is accessible in all methods within the same class.
- c. It is accessible throughout the entire class.
- d. It is accessible only within the method in which it is declared. ✓

Your answer is correct.

The correct answer is:

It is accessible only within the method in which it is declared.

Question 15

Correct

Mark 2.00 out of 2.00

What is the term for creating an object from a class?

Select one:

- a. Instantiation ✓
- b. Inheritance
- c. Abstraction
- d. Encapsulation

Your answer is correct.

The correct answer is:

Instantiation

Question 16

Correct

Mark 10.00 out of 10.00

Complete the following Java method `frequentItems(Map<String, Integer> map, int n)` to return a Set of String that contains all the keys in the input map that has value strictly larger than n.

You may assume the input map is not empty.

You must specify the type of the key, value when declaring a map; and the type of value when declaring a set, otherwise warning messages will be produced.

Map, Set, HashMap, HashSet have been imported, you must use them.

Test case:

```
Map<String, Integer> map = new HashMap<>();
map.put("a", 10);
map.put("b", 1);
map.put("c", 25);
frequentItems(map, 2); → the set { "a", "c" }, since the value corresponding to keys "a" and "c" in the map are greater than 2.
```

For example:

Test	Result
Map<String, Integer> map = new HashMap<>(); map.put("a", 10); map.put("b", 1); map.put("c", 25); Set<String> answer = frequentItems(map, 2); Set<String> expectedAnswer = new HashSet<>(); expectedAnswer.add("a"); expectedAnswer.add("c"); System.out.println(answer.equals(expectedAnswer));	true

Answer: (penalty regime: 0 %)

[Reset answer](#)

```
1 // FINAL EXAM CPT111 2223
2
3 public static Set<String> frequentItems(Map<String, Integer> map, int n) {
4     Set<String> set = new HashSet<>();
5     for (Map.Entry<String, Integer> entry : map.entrySet()) {
6         if (entry.getValue()>n){
7             set.add(entry.getKey());
8         }
9     }
10    return set;
11
12 }
```

	Test	Expected	Got	
✓	Map<String, Integer> map = new HashMap<>(); map.put("a", 10); map.put("b", 1); map.put("c", 25); Set<String> answer = frequentItems(map, 2); Set<String> expectedAnswer = new HashSet<>(); expectedAnswer.add("a"); expectedAnswer.add("c"); System.out.println(answer.equals(expectedAnswer));	true	true	✓

Passed all tests! ✓

► [Show/hide question author's solution \(Java\)](#)

Correct

Marks for this submission: 10.00/10.00.

Question 17

Correct

Mark 2.00 out of 2.00

What is the role of the Scene class in JavaFX?

Select one:

- a. It handles user input events.
- b. It defines the structure and content of a single screen. ✓
- c. It represents a graphical element in a JavaFX application.
- d. It manages the layout of GUI components.

Your answer is correct.

The correct answer is:

It defines the structure and content of a single screen.

Question 18

Correct

Mark 2.00 out of 2.00

Which class is used to represent an image in JavaFX?

Select one:

- a. ImageView ✓
- b. ImageLoader
- c. ImageStage
- d. ImagePane

Your answer is correct.

The correct answer is:

ImageView

Question 19

Correct

Mark 2.00 out of 2.00

What is the purpose of the catch block in Java exception?

Select one:

- a. To handle the exception by providing a specific code block to execute ✓
- b. To declare a new exception to throw after catching that exception
- c. To specify the type of exception to catch
- d. To print the message related to the exception caught

Your answer is correct.

The correct answer is:

To handle the exception by providing a specific code block to execute

Question 20

Correct

Mark 2.00 out of 2.00

In Java, when is the decision about which method to call made in the case of polymorphism/dynamic method selection?

Select one:

- a. At compile time
- b. At instantiation time
- c. At runtime ✓
- d. At class declaration time

Your answer is correct.

The correct answer is:

At runtime

Question 21

Correct

Mark 2.00 out of 2.00

In Java, which keyword is used to define a subclass?

Select one:

- a. extends ✓
- b. super
- c. subclass
- d. implements

Your answer is correct.

The correct answer is:

extends

Question 22

Correct

Mark 2.00 out of 2.00

What is the purpose of the super keyword in Java?

Select one:

- a. To access members of the superclass ✓
- b. To refer to the current instance of the class
- c. To override methods of the superclass
- d. To call the constructors of the superclass

Your answer is correct.

The correct answer is:

To access members of the superclass

Question 23

Correct

Mark 2.00 out of 2.00

What is the purpose of the BufferedWriter class in Java I/O?

Select one:

- a. To perform character encoding
- b. To write characters to a file efficiently ✓
- c. To manage directory operations
- d. To write binary data to a file efficiently

Your answer is correct.

The correct answer is:

To write characters to a file efficiently

Question 24

Partially correct

Mark 9.00 out of 10.00

Create a class to store data about a Module. A Module has a moduleName, a moduleCode, and a requirement on creditHours, and all these three variables should not be modified by unauthorized personnel. You should use sensible variable types and names, and create instance variables, a constructor, and an appropriate encapsulation method to show a formatted string containing the module's information.

```
public class Module { ✓
    private String moduleName;
    private String moduleCode;
    private int creditHours; ✓ ;

    public Module (String moduleName, String moduleCode, int creditHours) {
        this.moduleName = moduleName; ✓ ;
        this.moduleCode = moduleCode;
        this.creditHours = creditHours;
    }

    public void ✗ getModuleInfo() {
        return "Module Name: " + moduleName + ", Code: " + moduleCode + ", Credit Hours: " + creditHours; ✓ ;
    }
}
```

Question 25

Correct

Mark 4.00 out of 4.00

Declare the method named moduleRank that ranks the difficulty of module based on its credit hours. If the module has more than 4 credit hours, it's considered advanced; else if it has more than 2 credit hours, it's considered medium, otherwise, it's considered low.

```
public String moduleRank() {
    if (creditHours > 4) {
        return "Advanced";
    } else if (creditHours > 2) {
        return "Medium";
    } else {
        return "Low";
    }
}
```

Question 26

Correct

Mark 6.00 out of 6.00

Now we are creating a new class named Course to represent a course with a fixed number of modules. You are asked to implement this class to store the modules in an array and the instance of Course should be able to add individual modules into the array one by one.

```
public class Course {
    private String courseName;
    private Module[] modules;
    private int addedModuleCount;

    public Course(String courseName, int num0fModules) {
        this.courseName = courseName;
        modules = new Module[num0fModules];
        this.addedModuleCount = 0;
    }

    public void addModule(Module module) {
        if (addedModuleCount < modules.length) {
            this.modules[addedModuleCount] = module;
        }
    }
}
```

Question 27

Partially correct

Mark 7.00 out of 10.00

Complete the following class Vehicle and its subclass Car that leverage inheritance and overriding in their implementation.

```
public class Vehicle {
    protected ✓ String brand;
    protected ✓ int year;

    public Vehicle ✓ (String brand, int year) {
        this.brand = brand;
        this.year = year;
    }

    public displayInfo ✗ () {
        System.out.println("Brand: " + brand + ", Year: " + year);
    }
}

public class Car extends Vehicle {
    private ✓ String model;

    public ✓ Car(String brand, int year, String model) {
        super(String brand, int year) ✗ ; // Call the constructor of the superclass
        this.model = model;
    }

    @Override ✗
    public void displayInfo() {
        System.out.println("Brand: " + brand ✓ + ", Year: " + year ✓ + ", Model: " + model);
    }
}

public class FinalExam {
    public static void main(String[] args) {
        Vehicle myCar = new Car("Toyota", 2018, "Camry");
        myCar.displayInfo();
    }
}
```

Question 28

Correct

Mark 2.00 out of 2.00

In a Map, what happens when you attempt to insert a key-value pair with a key that already exists in the map?

Select one:

- a. A new pair of key and the new value is created and appended to the existing pair
- b. An exception will be thrown
- c. The new value is ignored and the existing value remains unchanged
- d. The new value overwrites the existing value associated with the key ✓

Your answer is correct.

The correct answer is:

The new value overwrites the existing value associated with the key

Question 29

Correct

Mark 2.00 out of 2.00

What happens if you try to add a duplicate element to a Set in Java?

Select one:

- a. It replaces the existing element with the new one
- b. It ignores the duplicate element ✓
- c. It throws a runtime exception
- d. It stores the element as the last element of the set

Your answer is correct.

The correct answer is:

It ignores the duplicate element

Question 30

Correct

Mark 2.00 out of 2.00

In GDPR, which rights ensures that a data subject can transfer their data to another organization or the data controller?

Select one:

- a. Right of migration
- b. Right to data portability ✓
- c. Right of relocation
- d. Right to data transfer

Your answer is correct.

The correct answer is:

Right to data portability

Question 31

Correct

Mark 2.00 out of 2.00

Which method is used to remove the last element from a List in Java?

Select one:

- a. delLast()
- b. pop()
- c. deleteLast()
- d. remove() ✓

Your answer is correct.

The correct answers are:

pop(),

remove()