



AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)

Faculty of Science and Technology (FST)

Department of Computer Science (CS)

Object Oriented Programming 1

MidTerm Lab Task-3

Fall 2022-23

1. Briefly Explain the following keywords:

- | | |
|------------------|----------------|
| a. OOP | h. Literals |
| b. Class | i. default |
| c. Object | j. new |
| d. Portability | k. this |
| e. Robustness | l. Scanner |
| f. Multithreaded | m. compareTo() |
| g. javac | n. capacity() |

2. Answer the following Questions:

- "Java supports multithreaded programming" Explain.
- "Java is secured" Explain.
- Why Java is platform independent?
- Why Java is not 100% Object-oriented?
- Explain public static void main(String args[]) in Java.
- Why is the main method static?
- Can we execute a program without main() method?
- How objects are stored in Java?
- What is the use of parse method in Java?
- What are wrapper classes in Java?
- Can we make constructors static?
- How can constructor chaining be done using this keyword?
- How are destructors defined in Java?
- Why we need Static Block?
- Why Static Block is called before main method?
- What are the restrictions that are applied to the Java static methods?
- What is Scanner Class in Java?

3. Write the difference between (Table Format):

- JDK, JRE, and JVM
- Implicit Type Casting and Explicit Type Casting
- Autoboxing and Unboxing
- Access specifiers in Java
- Constructors and Methods
- Heap and Stack Memory
- equals() and == in Java
- Mutable and Immutable
- String, String Builder, and String Buffer
- static (class) method and instance method

4. Write code for the following problems using Java.

- An organization has Managers, Admin officers, Salesman. All types of Employee have different salaries. Write a simple program to calculate their yearly salaries. You are expected to create necessary classes and a main function to print Employee information.
- A large company pays its salespeople on a commission basis. The salespeople each receive \$200 per week plus 9% of their gross sales for that week. For example, a salesperson who sells \$5000 worth of chemicals in a week receives \$200 plus 9% of \$5000, or a total of \$650. Develop a program that uses a while statement to input each salesperson's gross sales for last week and calculates and displays that salesperson's earnings.
- Suppose you are developing a spelling checker game for kids where a kid will enter words to check the spelling. When a kid wrongly input a number instead of a letter, an exception will arise and it will show that "Only letters are accepted" in the catch.
- Drivers are concerned with the mileage obtained by their automobiles. One driver has kept track of several trips by recording miles driven and gallons used for each trip. Develop a class DriveHistory that uses a while statement to input the miles driven and gallons used for each trip. The program should calculate and display the miles per gallon obtained for each trip.
- Suppose you are a developer in Kuratoli Software Solutions. Your company is developing a University Management System. You have been assigned to design the registration program of students. Where each student belongs to a Department, department offers Courses, Students can take multiple courses. But there is a policy where student can take up to 5 courses in each Semester. As it is an open credit system student are allowed to register as many semesters they want.

5. Explain the following figures:



Figure: 1

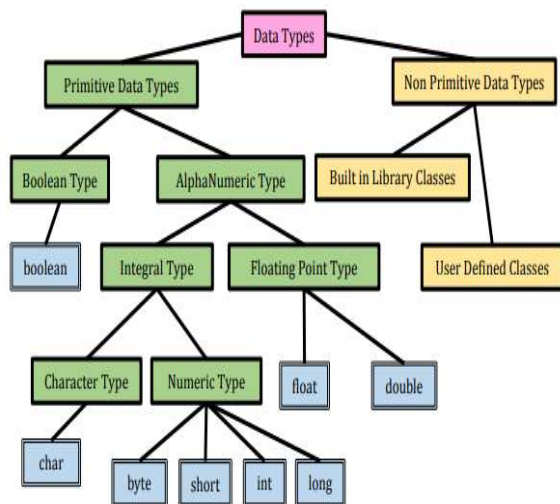


Figure: Data Type Classification Tree

Figure: 2

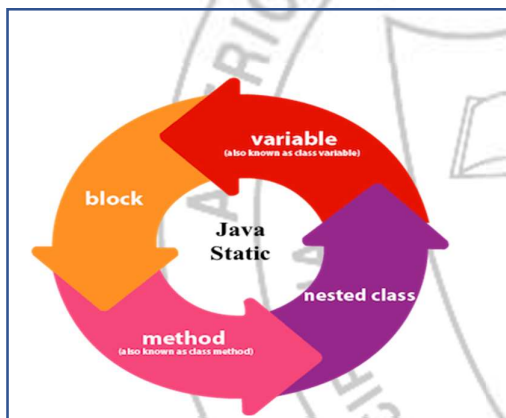


Figure: 4

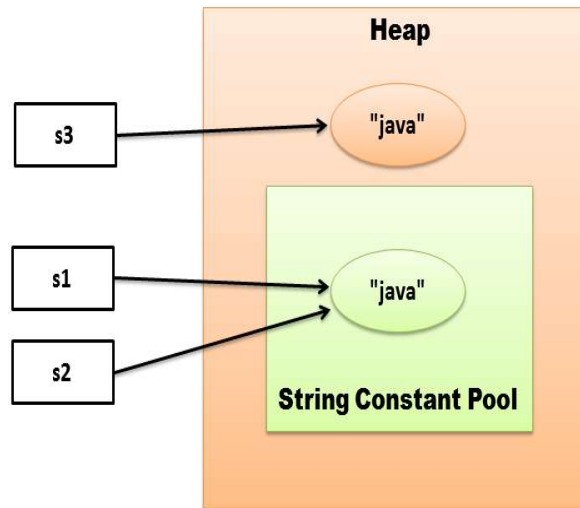


Figure: 3

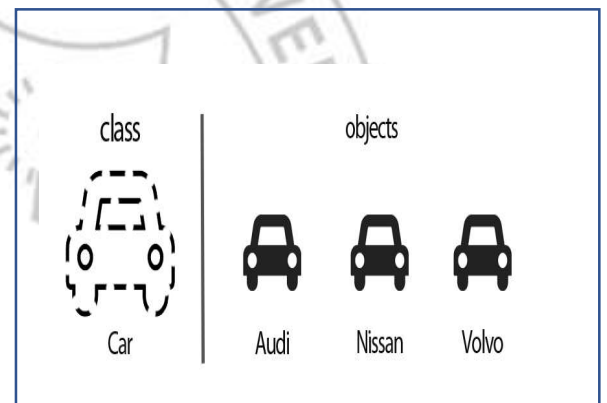


Figure: 5

Good Luck!