**AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)**
Faculty of Science and Technology (FST)
**Department of Computer Science (CS)**
Object Oriented Programming 1
MidTerm Assignment
Fall 2020-21

| Total Marks: | 20 | Course Teacher: | MD.NAZMUL HOSSAIN | Time: | 2 Weeks |
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**General Instructions:**
1. Answer all the Questions (Handwritten).
2. Use pencil/pen to write the answers and to draw diagrams.
3. Write your name & id at the top of each page to make your content unique.
4. Take photo/scan all the answers and prepare a single .pdf file.
5. Add all your codes & .pdf file in a folder then zip the folder.
6. The name of the .pdf & folder & .zip should be your university id number.
7. Get prepare yourself for the viva as you are going to evaluate strictly.
8. Submission Guidelines:
     **Submission**      : MidTerm Assignment
     **Submission Link** : https://forms.gle/YTtqjg9DR5cpZ3LZ9
     **Deadline**        : 21 November 2020.

**Special Note:**

*If a student is caught for unfair means during the viva then he/she will get 0 out of 20 & will be red marked for rest of the semester.*

**Department of Computer Science, AIUB**

1. **Briefly Explain the following keywords:**

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

2. **Answer the following Questions:**

   a. "Java supports multithreaded programming" Explain.
   b. "Java is secured" Explain.
   c. Why Java is platform independent?
   d. Why Java is not 100% Object-oriented?
   e. Explain public static void main(String args[]) in Java.
   f. Why is the main method static?
   g. Can we execute a program without main() method?
   h. How objects are stored in Java?
   i. What is the use of parse method in Java?
   j. What are wrapper classes in Java?
   k. Can we make constructors static?

l. How can constructor chaining be done using this keyword?
m. How are destructors defined in Java?
n. Why we need Static Block?
o. Why Static Block is called before main method?
p. What are the restrictions that are applied to the Java static methods?
q. What is Scanner Class in Java?

## 3. Write the difference between (Table Format):

a. JDK, JRE, and JVM
b. Implicit Type Casting and Explicit Type Casting
c. Autoboxing and Unboxing
d. Access specifiers in Java
e. Constructors and Methods
f. Heap and Stack Memory
g. equals() and == in Java
h. Mutable and Immutable
i. String, String Builder, and String Buffer
j. static (class) method and instance method

## 4. Write code for the following problems using Java.

a. 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.
b. 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.
c. 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.
d. 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.
e. 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.
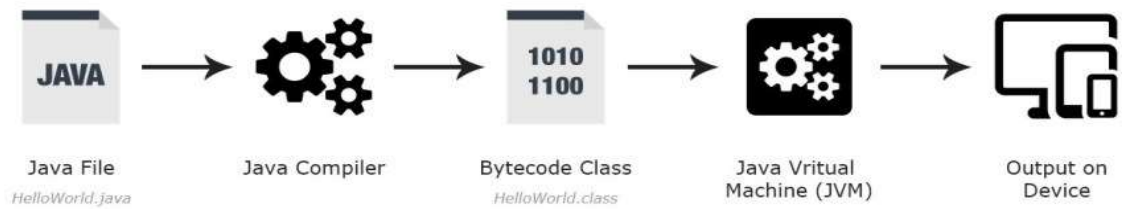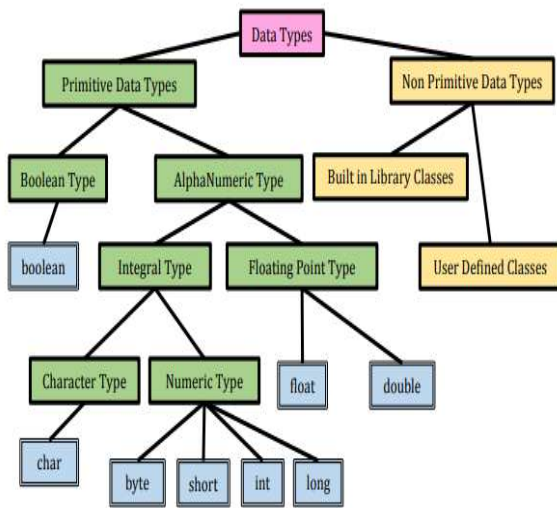
**5. Explain the following figures:**



Java File → Java Compiler → Bytecode Class → Java Virtual Machine (JVM) → Output on Device
HelloWorld.java                    HelloWorld.class

Figure: 1



Figure: Data Type Classification Tree
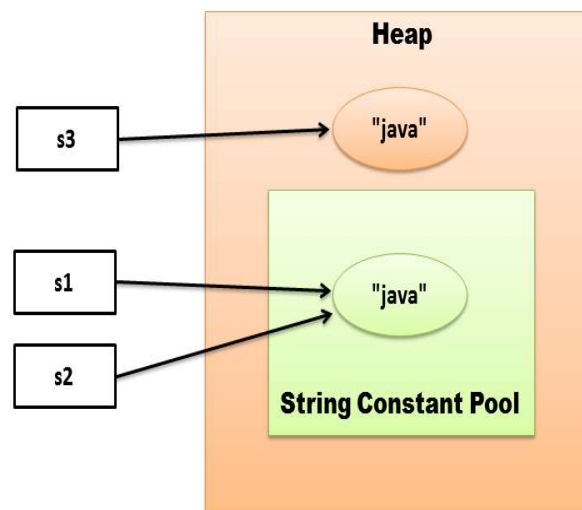
Figure: 2



Figure: 3
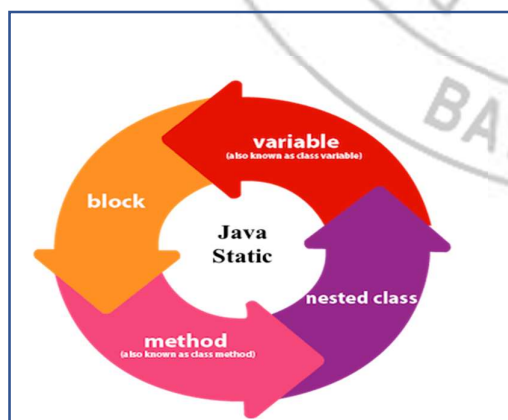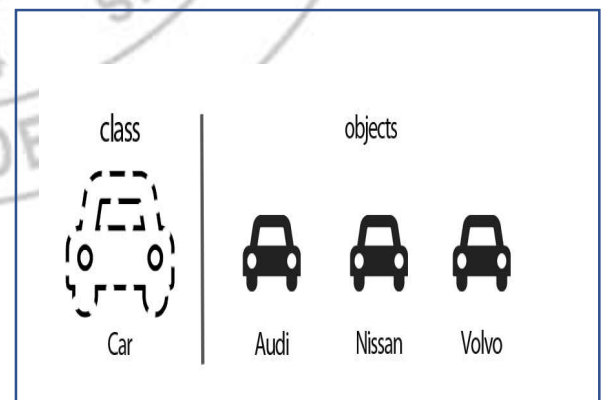


Figure: 4



Figure: 5

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