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| **SL.NO** | **Date** | **Time In** | **Time Out** | **Student** | **Topics** | | **Home Work / Assignment** | **Tutor** |
|  | **DEMO SESSION**  **(Mon-18/01/21)** | **6:00AM** | **7:30 AM** | **Mansi** | * **Introduction to Java Programming** * **Timeline History of Java** * **Why Java?, and Features of Java** * **Java vs other programming languages** * **Simple Java program demo** | | **Homework: Review of Java History and Application use cases in Java** | **Victor** |
| **1** | Sat-23/01/21 | **11:00 PM** | **12:20AM** | Mansi | * Generations of Computer * Program translators: Compilers vs Interpreters * Introduction to Java IDEs * Importance of Binary digits (0’s & 1’s) | | Simple program to 1) print “Hello” + name  2) print the numbers, 1 to 5 | **Victor** |
| **2** | Sun-24/01/21 | **11:00 PM** | **12:20AM** | Mansi | * Javadocs, Comments & Keywords * Getting started programming in Java-Downloading the necessary files * Structure of JDK & JVM | | Simple programs that prompt the user to enter their names and greet them accordingly | **Victor** |
| **3** | Sat-30/01/21 | **11:00 PM** | **12:20AM** | Mansi | * Introductory Java language features * Packages & Classes (Case Study: java.util) | | Discussion on “Scanner” and Math classes | **Victor** |
| 4 | Sun-31/01/21 | **11:00 PM** | **12:20AM** | Mansi | * Types & identifiers * Primitive type (int, Boolean, double, etc * Example programs on primitive types * Assignment (=) operator | | -The use of assignment vs comparative operators  -Simple programs on primitive types | **Victor** |
| 5 | Sun-07/02/21 | **11:00 PM** | **12:25AM** | Mansi | * Discussions and solution exercises to Mansi class assignment in PigLatin (Units 1 – 7) * Naming rules and styles in Java | | Assignment Review of 10 lab programs in PigLatin | **Victor** |
| 6 | Sat-14/02/21 | **11:00 PM** | **12:05AM** | Mansi | * Statements & Java Expressions * Naming rules and styles * Expressions with Multiple datatypes * Selection constructs (IF, IF-ELSE & Nested-IF statements) | | Program to print the largest of two & three numbers using IF-ELSE | **Victor** |
| 7 | Sat-20/02/21 | **9:40 PM** | **11:00PM** | Mansi | * Representing algorithms using flowcharts * Examples programs using multiple IF-Stmts such as: - Number guess program, vowels & consonants, election voting system etc | | Grade calculator based on given criteria using IF-ELSE statements | **Victor** |
| 8 | Sat-27/02/21 | **11:00 PM** | **12:20AM** | Mansi | * Switch-cases (multiple IF Statements) * Exercises on the “loop holes” of *SWITCH-Cases* \*\*(Review LOOPS completely) * Operators in Java * Use of FINAL variable in Java | | Vowels vs consonant exercises using Switch- cases | **Victor** |
| 9 | Sun-28/02/21 | **11:00 PM** | **12:20AM** | Mansi | * Operator precedence * Decisions & Iterations * Introduction to FOR, WHILE & DO-WHILE * Number generation using FOR-LOOPS & FOR-EACH LOOPS | | Generate first 5 natural numbers using while loops | **Victor** |
| 10 | Thurs-11/03/21 | **11:00 PM** | **12:00AM** | Mansi | * Exceptions in Java:- DivisionByZero, ArrayIndexOutOfBounds error * Example programs of WHILE & DO-WHILE loops * Program that keeps prompting the user for input | | Number guess game program | **Victor** |
| 11 | Fri-12/03/21 | **9:30 AM** | **10:30AM** | Mansi | * Example programs using WHILE & DO-WHILE * Prime factor generation using WHILE loop * BREAK & CONTINUE (Using WHILE) | | A trivial program that persistently prompts the  user to enter some texts. It will keep prompting the user for infinitely  many times unless the user enters Java | **Victor** |
| 12 | Sat-13/03/21 | **10:00PM** | **11:00PM** | Mansi | * Break and Continue stmts * Nested loops * Scope of Variables | | **Assignment**: Students grade calculator using nested loops | **Victor** |
| 13 | Sat-20/03/21 | **10:00PM** | **11:00PM** | Mansi | **ARRAYS**   * One-dimensional Array * Accessing array elements * Array variable assignments | | **Assignment:** Improved digit frequency counter | **-do-** |
| 14 | Sun-28/03/21 | **10:00PM** | **11:00PM** | Mansi | * Array utilities * Looping through an array * Accessing elements at a specific location | | **To do:** Read up and make notes on array classes.  Assignment on: Generating an array with random elements | **-do-** |
| 15 | Sat-10/04/21 | **10:00PM** | **11:00PM** | Mansi | **METHODS**   * Defining a method * Multiple Return Statements * Local Variables * Method overloading | | **Homework:** Read up reasons why we need methods in Java | **-do-** |
| 16 | Sun-11/04/21 | **9:30PM** | **10:30PM** | Mansi | * Writing Java Methods * Why Method? * Creating our own Methods * Basic Syntax | | 1. Complete the method: *public static boolean isPositive(int a),* that returns true if parameter a is positive.  2. Complete the method: *public static boolean isOdd(int a),* that returns true if the value of the parameter a is odd. | **-do-** |
| 17 | Sat-17/04/21 | **9:30PM** | **10:30PM** | Mansi | * The *void* return type Methods * Where do I write Methods? * Benefits of writing Methods * More examples on my YouTube channel | | 3. Complete the method: *public static int rollDice(),* that returns a random number between 1 and 6, representing the roll of a die.  4. Complete the method*: public static String capitalizeFirst(String name)*  that returns the supplied String with the first letter capitalized. You can assume the name parameter will already be lower case. | **-do-** |
| **18** | Sun-18/04/21 | **8:30PM** | **9:45PM** | Mansi | **Calling Methods**   * How do I call a method? * What happens at call? * Method return type * Parameter matching * Pass-by-value (important) | | Complete the method: public static String convertTime(double time, boolean isMinutes), that converts seconds to minutes and vice versa. The boolean parameter isMinutes will be supplied as true if time is in minutes.  Write a method that returns an **approximation** of the value of pi. The value of pi can be approximated by calculating the result of the following 'infinite' series (a sequence of numbers that continues forever): | **-do-** |
| **Duration so far: 20hrs, 35mins (Received only 7k on 14th March, 2021, bal. Rs. 8000)** | | | | | | | | |
| **19** | Sat-22/05/21 | **8:40pm** | **9:45pm** | Mansi | * Overview on Methods, use cases and applications | | **Discussion** on previous topics and OOPs concepts in Java (Methods fuels code-reusability) | **-do-** |
| **20** | Mon-24/05/21 | **9:00pm** | **10:00pm** | Mansi | * Method invocation * Parameter passing and returning values | | **Homework:** Explain the benefits of having a program perform some sets of instruction inside methods. Can you think of any downsides of doing so? | **-do-** |
| **21** | Tue-25/05/21 | **9:00pm** | **10:00pm** | Mansi | * Different variables with the same identifiers * Value swapping using methods | | **Homework:** Write a method called cube() that returns its double parameter raised to the third power. | **-do-** |
| **22** | Thurs-27/05/21 | **9:00pm** | **10:00pm** | Mansi | * Pass-by-value vs Pass-by-reference. * Differences and implementation | | **Homework:** Write a method to compute the followings… i) The square-root of 81  ii) The fourth-root of 81 and  iii) The sixth-root of 729 | **-do-** |
| **23** | Fri-28/05/21 | **9:00pm** | **10:00pm** | Mansi | * Method Overloading (How, Why and proper implementation) | | **Homework:** Explain how overloaded methods are selected and called | **-do-** |
| **24** | Mon-31/05/21 | **9:00pm** | **10:00pm** | Mansi | * Arrays: Introduction (one-dimensional arrays) * Accessing array elements * Explicit initialization * Array utilities | | Homework on: One-dimensional array elements assignment and explicit invocation | **-do-** |
| **25** | Wed-02/06/21 | **9:00pm** | **10:00pm** | Mansi | * Accessing Array Elements * Concept of “new” keyword * Demonstration of how array elements are accessed | | **Hands-On** Demo on Accessing array elements with examples | **-do-** |
| **26** | Thurs-03/06/21 | **9:00pm** | **10:00pm** | Mansi | * Explicit Initialization * Array Variable Assignment | | **Homework:** Passing arrays as inputs to methods | **-do-** |
| **27** | Fri-04/06/21 | **9:15pm** | **10:15pm** | Mansi | * Array Utilities * Arrays and Methods * Returning an Array | | **Hands-On:** Generating an array with random elements examples | **-do-** |
| **28** | Tue-08/06/21 | **9:00pm** | **10:00pm** | Mansi | * Sequential Search * Selection Sort | | **Program:** A program utilizing the selection sort to sort its inputs | **-do-** |
| **29** | Wed-09/06/21 | **9:00pm** | **10:00pm** | Mansi | * Initializer Lists for Multi-Dimensional Arrays * Lengths od Multi-Dim Arrays | | **Program:** Matrix power program  Finding the powers of matrices | **-do-** |
| **30** | Thurs-10/06/21 | **9:00pm** | **10:00pm** | Mansi | * Inheritance: Introduction * Concept and Role of Inheritance * Creating Subclasses from Superclass | | Simple examples on inheritance (use of **extends** keyword)  **Hands-on:** Creating and using a subclass without any additional data members and methods | **-do-** |
| **31** | Tue-15/06/21 | **9:00pm** | **10:00pm** | Mansi | * Use of “IS-A” vs “HAS-A” relationship * Designing Class Inheritance Hierarchy * Access levels and subclasses | | **Hands-On:** Subclass with additional data members and methods | **-do-** |
| **32** | Wed-16/06/21 | **8:30pm** | **10:00pm** | Mansi | * The use of **super** keyword and relationship with “**this**” keyword | | **Hands-On:** Using the keyword super to identify variables of the superclass | **-do-** |
| **33** | Thurs-17/06/21 | **9:00pm** | **10:00pm** | Mansi | * Recursive Problem Solving: Introduction and use cases | | **Hands-On:** Example exercises on recursive functions vis-a-viz: Factorial and **Fibonacci** | **-do-** |
|  |  |  |  |  | Was Supposed to Wind up Today but need another 2 hours of Tuition.  **Total Duration:** 20hrs, 35 mins + 16hrs, 35 mins **= 37 hrs, 10 mins** | | | **-do-** |
|  |  |  |  |  | **-do-** |
|  |  |  |  |  | **-do-** |
| **34** | Mon-21/06/21 | **8:30pm** | **10:00pm** | Mansi | * Recursive Problem Solving Contd: Tower of Hanoi use cases | Demo: Tower of Hanoi Example | |  |
| **35** | Thurs-24/06/21 | **8:30pm** | **10:00pm** | Mansi | * Tower of Hanoi, extended examples | “” | |  |
| **36** | Fri-25/06/21 | **8:30pm** | **9:30pm** | Mansi | * Revision: History and features of Java * Generations of Computers * Program translators and Binary operations | * Revision cum Discussion | |  |
|  |  |  |  |  | **Altogether: 37hrs 10mins + 4hrs = 41hrs 10mins** | | | |