

| 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Types & identifiers Primitive type (int, Boolean, double, etc) Example programs on primitive types Assignment (=) operator | <ul style="list-style-type: none"> -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) | Assignment Review of 10 lab programs in PigLatin | Victor |

OOP →
OOP →

Review

Reverse

API

chars

| | | | | | | | |
|----|----------------|----------|---------|-------|--|---|--------|
| | | | | | ✦ Naming rules and styles in Java | | |
| 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 ✦ Operators in Java ✦ Use of <u>FINAL</u> variable in Java | <u>Vowels</u> vs <u>consonant</u> 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 |

Exception handling

Required

| | | | | | | | |
|----|--------------|---------|---------|-------|--|---|--------|
| 11 | Fri-12/03/21 | 9:30 AM | 10:30AM | Mansi | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <p>ARRAYS</p> <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <p>METHODS</p> <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Writing Java Methods Why Method? Creating our own Methods Basic Syntax | 1. Complete the method: <i>public static boolean isPositive(int a)</i> , that returns true if parameter a is positive. 2. Complete the method: <i>public static boolean isOdd(int a)</i> , that returns true if the value of the parameter a is odd. | -do- |
| 17 | Sat-17/04/21 | 9:30PM | 10:30PM | Mansi | <ul style="list-style-type: none"> The void return type Methods Where do I write Methods? Benefits of writing Methods More examples on my YouTube channel | 3. Complete the method: <i>public static int rollDice()</i> , that returns a random number between 1 and 6, representing the roll of a die. 4. Complete the method: <i>public static String capitalizeFirst(String name)</i> 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 | <p><i>Method Declaration</i> <i>Calling Methods</i></p> <ul style="list-style-type: none"> How do I call a method? What happens at call? Method return type Parameter matching Pass-by-value (important) <p><i>int</i> <i>return int</i></p> | <p>Complete the method: <code>public static String convertTime(double time, boolean isMinutes)</code>, that converts seconds to minutes and vice versa. The boolean parameter <code>isMinutes</code> will be supplied as true if <code>time</code> is in minutes.</p> <p>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):</p> $\pi = 4 \times \left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \frac{1}{13} - \frac{1}{15} + \dots \right)$ | -do- |
| <p>Duration so far: 20hrs, 35mins (Received only 7k on 14th March, 2021, bal. Rs. 8000)</p> | | | | | | | |
| 19 | Sat-22/05/21 | 8:40pm | 9:45pm | Mansi | <ul style="list-style-type: none"> Overview on Methods, use cases and applications | <p>Discussion on previous topics and OOPs concepts in Java (Methods fuels code-reusability)</p> | -do- |
| 20 | Mon-24/05/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> Method invocation Parameter passing and returning values | <p>Homework: Explain the benefits of having a program perform some sets of instruction inside methods. Can you think of any downsides of doing so?</p> | -do- |
| 21 | Tue-25/05/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> Different variables with the same identifiers Value swapping using methods | <p>Homework: Write a method called <code>cube()</code> that returns its double parameter raised to the third power.</p> | -do- |
| 22 | Thurs-27/05/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> Pass-by-value vs Pass-by-reference. Differences and implementation | <p>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</p> | -do- |
| 23 | Fri-28/05/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> Method Overloading (How, Why and proper implementation) | <p>Homework: Explain how overloaded methods are selected and called</p> | -do- |
| 24 | Mon-31/05/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> Arrays: Introduction (one-dimensional arrays) Accessing array elements Explicit initialization | <p>Homework on: One-dimensional array elements assignment and explicit invocation</p> | -do- |

| | | | | | | | |
|----|----------------|--------|---------|-------|--|--|------|
| | | | | | <ul style="list-style-type: none"> Array utilities | | |
| 25 | Wed-02/06/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Explicit Initialization Array Variable Assignment | Homework: Passing arrays as inputs to methods | -do- |
| 27 | Fri-04/06/21 | 9:15pm | 10:15pm | Mansi | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Initializer Lists for Multi-Dimensional Arrays Lengths of Multi-Dim Arrays | Program: Matrix power program Finding the powers of matrices | -do- |
| 30 | Thurs-10/06/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> The use of <u>super</u> keyword and relationship with <u>this</u> keyword | Hands-On: Using the keyword super to identify variables of the superclass | -do- |
| 33 | Thurs-17/06/21 | 9:00pm | 10:00pm | Mansi | <ul style="list-style-type: none"> Recursive Problem Solving: Introduction and use cases | Hands-On: Example exercises on recursive functions vis-a-viz: Factorial and Fibonacci | -do- |
| 34 | Fri-18/06/21 | 9:00pm | 10:00pm | Mansi | <p>Was Supposed to Wind up Today but needs another hours of Tuition</p> <p>Total Duration: 20hrs, 35 mins + 16hrs, 35 mins = 37 hrs, 10 mins</p> | | |
| 35 | Sat-19/06/21 | 9:00pm | 10:00pm | Mansi | | | |
| 36 | Sun-20/06/21 | 9:00pm | 10:00pm | Mansi | | | |
| 38 | | | | | | | |

Review: 0.5 hrs
 → Introduction
 → Inheritance
 → Program 2 & 3
 (2 programs)

50% → 20 hours

10 + 2 = 12
 20 + 15 = 35
 32
 42 hrs
 50%