| | Sl No. | 1. Java Fundamentals |
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| Module -1 | 1. | Describe the general structure of a simple Java Program |
| | 2. | Name the Principles of OOPs. Explain |
| | 3. | Explain the key attributes of Java programming language. |
| | 4. | What is JVM? Why do we need it? |
| | 5. | What is Java development kit and java runtime environment? |
| | 6. | What is Keywords and Identifiers? List the rules to write an identifier. |
| | 7. | Explain the following :<br>i. Bytecode<br>ii. Javac utility<br>iii. Java utility |
| | | **2. Introducing Data types Operators** |
| | 1. | Discuss various data types used in Java. |
| | 2. | What is type Conversion and Casting? Explain automatic type promotion in expressions with rules and demo program. |
| | 3. | Explain the term with an example:<br>i. >>><br>ii. Left shift<br>iii. Bitwise operators<br>iv. &&<br>v. Right Shift |
| | | **3. Program Control Statements** |
| | 1. | What are the ways input characters from the keyboard? Explain |
| | 2. | Discuss the Conditional Statements (all if statements) with an example. |
| | 3. | Explain different types of Iteration Statements (while, do-while, for) and Jump Statements ( break, continue) with an example. |
| | 4. | Explain for-each loop with an example. |
| | 5. | Explain multi-way conditional statement (switch) with syntax. Give an example |
| | 6. | Explain usage of break with label and continue with label with an example. |
| | | **4. Introducing Classes, Objects and Methods** |
| | 1. | Define class. Give its general form. |
| | 2. | What are objects? How objects are created? |
| | 3. | What are constructors? Explain types of constructors |
| | 4. | Explain the usage of "this" keyword. |
| | 5. | Explain the following:<br>i. finalize()<br>ii. "this" keyword |

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| | | **5.More Data Types and Operators** |
| | 1. | What are Arrays? Explain different types of an array. |
| | 2. | How many ways an array can be initialized? Explain with a syntax. |
| | 3. | What are Irregular array? Write a program to find the sum of all the elements in an Irregular array. |
| | 4. | Write a short note on length member in an array. |
| | | **6.Strings** |
| | 1. | What are the three string-related languages features |
| | 2 | Explain obtaining the characters within a string |
| | 3 | Explain 5 methods to compare string |
| | 4 | String indexOf and lastindexOf() |
| | 5 | What are the methods to obtain a modified string |
| | 6 | Short notes on |
| | | Length() |
| | | Uppercase and lowercase method |
| | | indexOf and lastindexOf |
| | 7 | Difference between String Buffer and String |
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| **Module -2** | | **1 : A Closer look at methods** |
| | 1 | Explain how arguments are passed in the method |
| | 2 | Define recursion. Write a program to search a key using binary search, factorial, Fibonacci |
| | 3 | Explain static method , static variable, static block |
| | 4 | What are nested class? Give its general form. What are the types of nested classes? |
| | 5 | Explain how to create instance of inner class. |
| | 6 | With suitable program. Explain varargs in java. |
| | | **2: Inheritance** |
| | 1 | Describe the various forms inheritance |
| | 2 | Demonstrate a program. How to achieve run time polymorphism |
| | 3 | What is dynamic method dispatch? Demonstrate with example |
| | 4 | Explain the uses of super keyword |
| | 5 | Explain how super class constructor are called using super keyword. |
| | 6 | Uses of final(final class, final variable, final method) |
| | 7 | Object class |
| | 8 | Abstract class |

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| **Module-3** | | **1: Interface** |
| | 1. | What are interfaces? Write a program to implement multiple interfaces |
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| | | **Package** |
| | 1 | Define packages. Explain the access protection for class members with respect to packages. |
| | 2 | Lab program 7 and write steps to create packages in same directory and different directory |
| | 3 | Difference between import and static import |
| **Module 3** | | **Exception Handling** |
| | 1 | What is an exception? Create a try which generates three types of exceptions and catch those exceptions by incorporating necessary catch blocks. |
| | 2 | What is exception handling? How to implement catch blocks |
| | 3 | Explain the exception handling mechanism with syntax |
| | 4 | What are compile time and runtime exception |
| | 5 | Write a java program demonstrate runtime exception called IOException using try-catch block |
| | 6 | Explain how to create an userdefined exception |
| | 7 | List some of the most common type of exception that might occur in java |
| **Module 4** | | **Multithreading** |
| | 1 | What is multithreading? Explain two advantage of multithreaded programs |
| | 2 | What is synchronization methods and synchronization block? |
| | 3 | Explain how interthread communication can be achived in multithreading with demo example? |
| | 4 | Write a java program to create multiple threads with different priorities.(or)Develop a program to create multithreads with different priorities |
| | 5 | Define thread |
| | 6 | Explain how threads are created (or ) Discuss different approaches for creating threads with suitable example. |
| | 7 | Life cycle of thread |

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| | 8 | Short note on thread priority |
| | 9 | isAlive(), join() |
| | | **Enumeration, AutoBoxing, Annotations** |
| | 1 | What is enumeration? |
| | 2 | Explain values( ) and valueOf( ) methods |
| | 3 | Explain auto boxing and auto unboxing with an example |
| | 4 | Type wrapper |
| | 5 | Lab program 8 |
| | 6 | What are annotations? Explain @Override. |
| | | **Applet** |
| | 1 | Lifecycle of an applet |
| | 2 | Explain applet architecture along with initialization and termination of applet. |
| | 3 | Write an applet program to handle keyboard event |
| | 4 | How to send parameters to applet |
| | 5 | showStatus() and repaint() |
| | | **Networking** |
| | 1 | Define Socket. |
| | 2 | List the different types of classes used in networking |
| | 3 | Mention the package name to be imported for networking program |
| | 4 | Explain the following<br>a. getLocalHost()<br>b. getByName()<br>c. getByAddress()<br>d. getInetAddress() |
| | 5 | Define URL class. Explain the different components of URL |
| | | **Collections** |

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| | 1 | What is collection framework |
| | 2 | Interfaces and classes in collection |
| | 3 | Linked list |

# Programs List

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| 1. | Write a program to convert from uppercase to lowercase using bitwise operator. |
| 2. | Write a program to convert from lowercase to uppercase using bitwise operator. |
| 3. | Write a program to print the following pattern<br>A<br>A B<br>A B C<br>A B C D |
| 4. | Write a program to display bits within a byte(for Integer type) |
| 5. | Write a program to find minimum and maximum element of an array. |
| 6. | Write a program to searching an element of an array. |
| 7. | Write a program to sort elements of an array. |
| 8. | Write a program to sum all elements in an array. |
| 9. | Write a program to Transpose of Matrix. |
| 10. | Write a program to sum of diagonal elements of a matrix. |
| 11. | Write a program to multiplication of two matrix. |