| Topic | Detail |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| What is Java? |  |  |  |  |  |  |
|  | Describe the features of Java |  |  |  |  |  |
|  | Describe the real-world applications of Java |  |  |  |  |  |
| Java Basic |  |  |  |  |  |  |
|  | Describe the Java Development Kit (JDK) and the Java Runtime Environment (JRE) |  |  |  |  |  |
|  | Describe the components of a basic Java program |  |  |  |  |  |
|  | Describe the components of object-oriented programming |  |  |  |  |  |
|  | Compile and execute a Java program |  |  |  |  |  |
| Basic Java Elements |  |  |  |  |  |  |
|  | Identify the conventions to be followed in a Java program |  |  |  |  |  |
|  | Use Java reserved words |  |  |  |  |  |
|  | Use single-line and multi-line comments in Java programs |  |  |  |  |  |
|  | Import other Java packages to make them accessible in your code |  |  |  |  |  |
|  | Describe the java.lang package |  |  |  |  |  |
| Working with Data Types |  |  |  |  |  |  |
|  | Declare and initialize variables including a  variable using final |  |  |  |  |  |
|  | Cast a value from one data type to another including automatic and manual promotion |  |  |  |  |  |
|  | Declare and initialize a String variable |  |  |  |  |  |
| Java Operators |  |  |  |  |  |  |
|  | Use basic arithmetic operators to manipulate data including +, -, \*, /, and % |  |  |  |  |  |
|  | Use the increment and decrement operators |  |  |  |  |  |
|  | Use relational operators including ==, !=, >, >=, <, and <= |  |  |  |  |  |
|  | Use arithmetic assignment operators |  |  |  |  |  |
|  | Use conditional operators including &&, ||, and ? |  |  |  |  |  |
|  | Describe the operator precedence and use of parenthesis |  |  |  |  |  |
| String Class |  |  |  |  |  |  |
|  | Develop code that uses methods from the String class |  |  |  |  |  |
|  | Format Strings using escape sequences including %d, %n, and %s |  |  |  |  |  |
| Random und Math Class |  |  |  |  |  |  |
|  | Use the Random class |  |  |  |  |  |
|  | Use the Math class |  |  |  |  |  |
| Decision Statements |  |  |  |  |  |  |
|  | Use the decision making statement  (if-then and if-then-else) |  |  |  |  |  |
|  | Use the switch statement |  |  |  |  |  |
|  | Compare how == differs between primitives and objects |  |  |  |  |  |
|  | Compare two String objects by using the compareTo and equals methods |  |  |  |  |  |
| Looping Statements |  |  |  |  |  |  |
|  | Describe looping statements |  |  |  |  |  |
|  | Use a for loop including an enhanced for loop |  |  |  |  |  |
|  | Use a while loop |  |  |  |  |  |
|  | Use a do- while loop |  |  |  |  |  |
|  | Compare and contrast the for, while, and do-while loops |  |  |  |  |  |
|  | Develop code that uses break and continue statements |  |  |  |  |  |
| Debugging & Exception Handling |  |  |  |  |  |  |
|  | Identify syntax and logic errors |  |  |  |  |  |
|  | Use exception handling |  |  |  |  |  |
|  | Handle common exceptions thrown |  |  |  |  |  |
|  | Use try and catch blocks |  |  |  |  |  |
| Arrays und ArrayList |  |  |  |  |  |  |
|  | Use a one-dimensional array |  |  |  |  |  |
|  | Create and manipulate an ArrayList |  |  |  |  |  |
|  | Traverse the elements of an ArrayList by using iterators and loops including the enhanced for loop |  |  |  |  |  |
|  | Compare an array and an ArrayList |  |  |  |  |  |
| Classes and Constructor |  |  |  |  |  |  |
|  | Create a new class including a main method |  |  |  |  |  |
|  | Use the private modifier |  |  |  |  |  |
|  | Describe the relationship between an object and its members |  |  |  |  |  |
|  | Describe the difference between a class variable, an instance variable, and a local variable |  |  |  |  |  |
|  | Develop code that creates an object's default constructor and modifies the object's fields |  |  |  |  |  |
|  | Use constructors with and without parameters |  |  |  |  |  |
|  | Develop code that overloads constructors |  |  |  |  |  |
| Java Methods |  |  |  |  |  |  |
|  | Describe and create a method |  |  |  |  |  |
|  | Create and use accessor and mutator methods |  |  |  |  |  |
|  | Create overloaded methods |  |  |  |  |  |
|  | Describe a static method and demonstrate its use within a program |  |  |  |  |  |