1|SAQ|What is a variable in programming? | BTL 1 | CO 1

1|SAQ|What is a data type? | BTL 1 | CO 1

1|SAQ|What is a constant in programming? | BTL 1 | CO 1

1|SAQ|What does a compiler do? | BTL 1 | CO 1

1|SAQ|What is an interpreter? | BTL 1 | CO 1

1|SAQ|What is an algorithm? | BTL 1 | CO 1

1|SAQ|What is pseudocode? | BTL 1 | CO 1

1|SAQ|What is an array? | BTL 1 | CO 1

1|SAQ|What is the difference between syntax and logic errors? | BTL 2 | CO 1

1|SAQ|What is the difference between high-level and low-level languages? | BTL 1 | CO 1

1|SAQ|What is the purpose of a flowchart? | BTL 1 | CO 1

1|SAQ|What is the difference between a source code and an object code? | BTL 1 | CO 1

1|SAQ|What is the role of an Integrated Development Environment (IDE)? | BTL 1 | CO 1

1|SAQ|What is machine language? | BTL 1 | CO 1

1|SAQ|What is assembly language? | BTL 1 | CO 1

1|SAQ|What is the difference between a variable and a constant? | BTL 2 | CO 1

1|SAQ|What is the purpose of debugging? | BTL 1 | CO 1

1|SAQ|What is the significance of whitespace in programming? | BTL 1 | CO 1

1|SAQ|What is a token in programming? | BTL 1 | CO 1

1|SAQ|What is the difference between static and dynamic typing? | BTL 2 | CO 1

1|LAQ|Explain the process of compiling a program from source code to executable code. | BTL 2 | CO 1

1|LAQ|Write a program to add two numbers and explain how variables are used in the program. | BTL 3 | CO 1

1|LAQ|Describe the different types of data types and their significance in programming. | BTL 2 | CO 1

1|LAQ|Explain the working of a compiler and compare it with an interpreter. | BTL 4 | CO 1

1|LAQ|Write a pseudocode to find the largest of three numbers and explain the steps. | BTL 3 | CO 1

1|LAQ|Describe the steps involved in writing an algorithm and converting it into a program. | BTL 4 | CO 1

1|LAQ|Write a program to reverse an array and explain how arrays are initialized and accessed. | BTL 3 | CO 1

1|LAQ|Compare and contrast high-level and low-level programming languages with examples. | BTL 4 | CO 1

1|LAQ|Explain the role of an IDE in writing, compiling, and debugging a program. | BTL 2 | CO 1

1|LAQ|Write a flowchart and pseudocode for calculating the area of a rectangle. | BTL 3 | CO 1

1|LAQ|Differentiate between machine language and assembly language, and their use in programming. | BTL 2 | CO 1

1|LAQ|Write a program to calculate the sum of an array of integers and explain the code. | BTL 3 | CO 1

1|LAQ|Describe the importance of debugging in the software development process. | BTL 4 | CO 1

1|LAQ|Explain the types of errors (syntax, runtime, logical) encountered in programming. | BTL 2 | CO 1

1|LAQ|Write a program that demonstrates the use of constants in solving real-world problems. | BTL 3 | CO 1

1|LAQ|Explain how different operators (arithmetic, relational, logical) are used in programming with examples. | BTL 4 | CO 1

1|LAQ|Write a program that shows the use of static and dynamic typing in programming languages. | BTL 3 | CO 1

1|LAQ|Explain the concept of memory management in programming languages. | BTL 4 | CO 1

1|LAQ|Discuss the difference between interpreted and compiled programming languages with examples. | BTL 4 | CO 1

1|LAQ|Describe how an algorithm is converted to a flowchart and then into a program. | BTL 4 | CO 1

2|SAQ|What is a conditional statement? | BTL 1 | CO 2

2|SAQ|What is a loop in programming? | BTL 1 | CO 2

2|SAQ|What is an if-else statement? | BTL 1 | CO 2

2|SAQ|What is the difference between a while loop and a do-while loop? | BTL 2 | CO 2

2|SAQ|What is the purpose of a break statement? | BTL 1 | CO 2

2|SAQ|What is a switch case statement? | BTL 1 | CO 2

2|SAQ|What is recursion? | BTL 1 | CO 2

2|SAQ|What is the difference between a for loop and a while loop? | BTL 2 | CO 2

2|SAQ|What is an infinite loop? | BTL 1 | CO 2

2|SAQ|What is a nested loop? | BTL 1 | CO 2

2|SAQ|What is the continue statement used for in loops? | BTL 1 | CO 2

2|SAQ|What is the syntax of an if statement? | BTL 1 | CO 2

2|SAQ|What is a ternary operator? | BTL 1 | CO 2

2|SAQ|What is the difference between break and continue in loops? | BTL 2 | CO 2

2|SAQ|What is a control structure? | BTL 1 | CO 2

2|SAQ|What is a compound statement in programming? | BTL 1 | CO 2

2|SAQ|What is the difference between entry-controlled and exit-controlled loops? | BTL 2 | CO 2

2|SAQ|What is the purpose of the default case in a switch statement? | BTL 1 | CO 2

2|SAQ|What is a conditional operator? | BTL 1 | CO 2

2|SAQ|What is the syntax of a switch-case statement? | BTL 1 | CO 2

2|LAQ|Explain the use of if-else statements in programming with examples. | BTL 2 | CO 2

2|LAQ|Write a program to check whether a number is even or odd using if-else statements. | BTL 3 | CO 2

2|LAQ|Describe the different types of loops (for, while, do-while) used in programming with examples. | BTL 4 | CO 2

2|LAQ|Write a program to print the multiplication table of a given number using a for loop. | BTL 3 | CO 2

2|LAQ|Explain the concept of recursion and write a recursive program to calculate the factorial of a number. | BTL 3 | CO 2

2|LAQ|Differentiate between while loop and do-while loop with examples. | BTL 2 | CO 2

2|LAQ|Write a program to demonstrate the use of break and continue statements in loops. | BTL 3 | CO 2

2|LAQ|Explain the switch-case statement in programming and write a program to simulate a simple calculator using switch-case. | BTL 3 | CO 2

2|LAQ|Discuss the concept of nested loops and write a program to print a pyramid pattern using nested loops. | BTL 3 | CO 2

2|LAQ|Write a program to find the sum of the first 10 natural numbers using a while loop. | BTL 3 | CO 2

2|LAQ|Compare and contrast entry-controlled and exit-controlled loops with examples. | BTL 4 | CO 2

2|LAQ|Write a program to find the largest of three numbers using if-else-if ladder. | BTL 3 | CO 2

2|LAQ|Explain the concept of infinite loops and how to avoid them in programming. | BTL 4 | CO 2

2|LAQ|Write a program to check if a number is prime using a for loop. | BTL 3 | CO 2

2|LAQ|Discuss the importance of control structures in programming with examples. | BTL 4 | CO 2

2|LAQ|Write a program to find the sum of digits of a number using a while loop. | BTL 3 | CO 2

2|LAQ|Explain how recursion is used to solve complex problems with an example. | BTL 4 | CO 2

2|LAQ|Write a program to calculate the sum of the first n Fibonacci numbers using recursion. | BTL 3 | CO 2

2|LAQ|Discuss the purpose of the break and continue statements in controlling loop flow with examples. | BTL 4 | CO 2

2|LAQ|Write a program to simulate a menu-driven system using switch-case statements. | BTL 3 | CO 2

3|SAQ|What is a data type in programming? | BTL 1 | CO 3

3|SAQ|What is the difference between primitive and non-primitive data types? | BTL 2 | CO 3

3|SAQ|What is a variable in programming? | BTL 1 | CO 3

3|SAQ|What is the scope of a variable? | BTL 1 | CO 3

3|SAQ|What is a constant? | BTL 1 | CO 3

3|SAQ|What is a global variable? | BTL 1 | CO 3

3|SAQ|What is a local variable? | BTL 1 | CO 3

3|SAQ|What is an enumerated data type? | BTL 1 | CO 3

3|SAQ|What is type conversion (typecasting)? | BTL 1 | CO 3

3|SAQ|What is implicit type conversion? | BTL 1 | CO 3

3|SAQ|What is explicit type conversion? | BTL 1 | CO 3

3|SAQ|What is a reference variable? | BTL 2 | CO 3

3|SAQ|What is the difference between an integer and a float data type? | BTL 2 | CO 3

3|SAQ|What is a string data type? | BTL 1 | CO 3

3|SAQ|What is the purpose of the char data type? | BTL 1 | CO 3

3|SAQ|What is the significance of variable initialization? | BTL 2 | CO 3

3|SAQ|What is the difference between static and automatic variables? | BTL 2 | CO 3

3|SAQ|What is a dynamic variable? | BTL 1 | CO 3

3|SAQ|What is memory allocation in programming? | BTL 1 | CO 3

3|SAQ|What is the difference between signed and unsigned integers? | BTL 2 | CO 3

3|LAQ|Explain the different types of data types available in a programming language with examples. | BTL 2 | CO 3

3|LAQ|Write a program that demonstrates the use of primitive and non-primitive data types in a language of your choice. | BTL 3 | CO 3

3|LAQ|Explain the concept of variable declaration and initialization in programming with examples. | BTL 4 | CO 3

3|LAQ|Write a program that demonstrates the scope of local and global variables in a function. | BTL 3 | CO 3

3|LAQ|Describe typecasting in programming and differentiate between implicit and explicit type conversions. | BTL 4 | CO 3

3|LAQ|Write a program that demonstrates explicit type conversion from integer to float and vice versa. | BTL 3 | CO 3

3|LAQ|Explain the importance of constants in programming and provide examples where constants can be effectively used. | BTL 4 | CO 3

3|LAQ|Write a program to calculate the area of a circle using constant variables for pi and radius. | BTL 3 | CO 3

3|LAQ|Compare and contrast static and automatic variables in programming with an example. | BTL 4 | CO 3

3|LAQ|Write a program that demonstrates the use of enumerated data types in solving a real-world problem. | BTL 3 | CO 3

3|LAQ|Explain the difference between signed and unsigned integers and their applications in programming. | BTL 4 | CO 3

3|LAQ|Write a program to demonstrate the use of dynamic memory allocation using pointers. | BTL 3 | CO 3

3|LAQ|Describe the use of string data types in programming and write a program to reverse a string. | BTL 4 | CO 3

3|LAQ|Write a program to calculate the factorial of a number using recursion, demonstrating the use of static variables. | BTL 3 | CO 3

3|LAQ|Explain how memory allocation works for different data types with examples. | BTL 4 | CO 3

3|LAQ|Write a program that demonstrates how to initialize and manipulate arrays of different data types. | BTL 3 | CO 3

3|LAQ|Describe the difference between reference and value types in programming with examples. | BTL 4 | CO 3

3|LAQ|Write a program that demonstrates the difference between passing variables by value and by reference. | BTL 3 | CO 3

3|LAQ|Explain the significance of variable scope and lifetime with examples. | BTL 4 | CO 3

3|LAQ|Write a program to demonstrate the use of unsigned integers and how they affect arithmetic operations. | BTL 3 | CO 3

4|SAQ|What is object-oriented programming (OOP)? | BTL 1 | CO 4

4|SAQ|What is a class in OOP? | BTL 1 | CO 4

4|SAQ|What is an object in OOP? | BTL 1 | CO 4

4|SAQ|What is inheritance in OOP? | BTL 1 | CO 4

4|SAQ|What is polymorphism in OOP? | BTL 1 | CO 4

4|SAQ|What is encapsulation in OOP? | BTL 1 | CO 4

4|SAQ|What is abstraction in OOP? | BTL 1 | CO 4

4|SAQ|What is method overloading? | BTL 2 | CO 4

4|SAQ|What is method overriding? | BTL 2 | CO 4

4|SAQ|What is the difference between an abstract class and an interface? | BTL 2 | CO 4

4|SAQ|What is a constructor in OOP? | BTL 1 | CO 4

4|SAQ|What is the difference between a class and an object? | BTL 2 | CO 4

4|SAQ|What is multiple inheritance? | BTL 1 | CO 4

4|SAQ|What is the purpose of the ‘this’ keyword in OOP? | BTL 1 | CO 4

4|SAQ|What is the difference between private, public, and protected access specifiers? | BTL 2 | CO 4

4|SAQ|What is dynamic binding in OOP? | BTL 2 | CO 4

4|SAQ|What is an interface in OOP? | BTL 1 | CO 4

4|SAQ|What is the difference between a shallow copy and a deep copy of an object? | BTL 2 | CO 4

4|SAQ|What is a destructor in OOP? | BTL 1 | CO 4

4|SAQ|What is the purpose of a virtual function in OOP? | BTL 1 | CO 4

4|LAQ|Explain the four pillars of OOP (Inheritance, Polymorphism, Encapsulation, and Abstraction) with examples. | BTL 4 | CO 4

4|LAQ|Write a program to demonstrate inheritance in OOP by creating a base class and a derived class. | BTL 3 | CO 4

4|LAQ|Explain the concept of polymorphism in OOP and provide examples of method overloading and method overriding. | BTL 4 | CO 4

4|LAQ|Write a program that demonstrates encapsulation in OOP by defining private members in a class. | BTL 3 | CO 4

4|LAQ|Describe the differences between static and dynamic polymorphism in OOP with examples. | BTL 4 | CO 4

4|LAQ|Write a program to demonstrate method overriding using virtual functions. | BTL 3 | CO 4

4|LAQ|Explain the concept of abstraction in OOP and how it is implemented using abstract classes and interfaces. | BTL 4 | CO 4

4|LAQ|Write a program to demonstrate multiple inheritance in OOP and explain how ambiguity is resolved. | BTL 3 | CO 4

4|LAQ|Discuss the role of constructors in OOP and write a program to demonstrate constructor overloading. | BTL 4 | CO 4

4|LAQ|Write a program that demonstrates the use of an interface in OOP. | BTL 3 | CO 4

4|LAQ|Explain the differences between a shallow copy and a deep copy in OOP with examples. | BTL 4 | CO 4

4|LAQ|Write a program to demonstrate the use of destructors in managing object lifecycle in OOP. | BTL 3 | CO 4

4|LAQ|Discuss the differences between private, public, and protected access specifiers with examples. | BTL 4 | CO 4

4|LAQ|Write a program to demonstrate the concept of dynamic binding in OOP using virtual functions. | BTL 3 | CO 4

4|LAQ|Explain how inheritance promotes code reusability in OOP with a real-world example. | BTL 4 | CO 4

4|LAQ|Write a program that demonstrates the difference between method overloading and method overriding. | BTL 3 | CO 4

4|LAQ|Discuss the use of the ‘this’ keyword in resolving ambiguity in OOP with an example. | BTL 4 | CO 4

4|LAQ|Write a program to create a class hierarchy that demonstrates multilevel inheritance. | BTL 3 | CO 4

4|LAQ|Explain the concept of virtual functions in OOP and their importance in achieving runtime polymorphism. | BTL 4 | CO 4

4|LAQ|Write a program that demonstrates polymorphism through interfaces in OOP. | BTL 3 | CO 4

5|SAQ|What is file handling in programming? | BTL 1 | CO 5

5|SAQ|What is a file pointer? | BTL 1 | CO 5

5|SAQ|What are the different modes of opening a file? | BTL 1 | CO 5

5|SAQ|What is a text file? | BTL 1 | CO 5

5|SAQ|What is a binary file? | BTL 1 | CO 5

5|SAQ|What is the difference between reading from a file and writing to a file? | BTL 2 | CO 5

5|SAQ|What is exception handling? | BTL 1 | CO 5

5|SAQ|What is a try-catch block? | BTL 1 | CO 5

5|SAQ|What is a finally block in exception handling? | BTL 1 | CO 5

5|SAQ|What is the purpose of the throw keyword? | BTL 1 | CO 5

5|SAQ|What is the difference between checked and unchecked exceptions? | BTL 2 | CO 5

5|SAQ|What is the difference between an exception and an error? | BTL 2 | CO 5

5|SAQ|What is the purpose of file streams in programming? | BTL 1 | CO 5

5|SAQ|What is the role of buffers in file handling? | BTL 1 | CO 5

5|SAQ|What is a custom exception? | BTL 1 | CO 5

5|SAQ|What is the purpose of the try-with-resources statement? | BTL 2 | CO 5

5|SAQ|What is file I/O? | BTL 1 | CO 5

5|SAQ|What is the use of the fopen() and fclose() functions in C? | BTL 1 | CO 5

5|SAQ|What is the difference between append mode and write mode in file handling? | BTL 2 | CO 5

5|SAQ|What is the significance of handling exceptions in large-scale applications? | BTL 2 | CO 5

5|LAQ|Explain the different modes for opening a file in programming and their significance. | BTL 4 | CO 5

5|LAQ|Write a program to read and write data to a file using file streams. | BTL 3 | CO 5

5|LAQ|Describe the process of reading and writing data to binary files with an example. | BTL 4 | CO 5

5|LAQ|Write a program to copy the contents of one file to another file. | BTL 3 | CO 5

5|LAQ|Explain the concept of exception handling and the role of try, catch, and finally blocks with examples. | BTL 4 | CO 5

5|LAQ|Write a program to demonstrate exception handling using try-catch blocks. | BTL 3 | CO 5

5|LAQ|Explain the difference between checked and unchecked exceptions with examples. | BTL 4 | CO 5

5|LAQ|Write a program that demonstrates the use of throw and throws in exception handling. | BTL 3 | CO 5

5|LAQ|Discuss the importance of the finally block in exception handling with an example. | BTL 4 | CO 5

5|LAQ|Write a program to create and handle a custom exception in a real-world scenario. | BTL 3 | CO 5

5|LAQ|Explain how file handling is implemented in C/C++ with functions such as fopen(), fclose(), and fprintf(). | BTL 4 | CO 5

5|LAQ|Write a program that demonstrates reading and writing data to a text file in Python. | BTL 3 | CO 5

5|LAQ|Discuss the use of the try-with-resources statement in Java for file handling. | BTL 4 | CO 5

5|LAQ|Write a program to append data to an existing file and read its contents. | BTL 3 | CO 5

5|LAQ|Explain the role of file pointers in navigating through files in programming. | BTL 4 | CO 5

5|LAQ|Write a program that demonstrates file handling in binary mode, reading and writing complex data types. | BTL 3 | CO 5

5|LAQ|Describe the concept of file I/O and its importance in real-world applications. | BTL 4 | CO 5

5|LAQ|Write a program to demonstrate error handling in file I/O operations. | BTL 3 | CO 5

5|LAQ|Explain how exception handling can improve the reliability and maintainability of software systems. | BTL 4 | CO 5

5|LAQ|Write a program to demonstrate nested exception handling and rethrowing exceptions in Java/C++. | BTL 3 | CO 5