Procedure-oriented programming (POP) and object-oriented programming (OOP) are two fundamental programming paradigms.

Here are the main differences between these two:

**Procedure-Oriented Programming (POP)**

1. **Focus**: POP focuses on functions or procedures that operate on data.
2. **Structure**: Programs are divided into small parts called functions or procedures.
3. **Data**: Data is often shared among functions, leading to potential issues with data integrity.
4. **Modularity**: Less modular as the program is written as a sequence of instructions.
5. **Approach**: Follows a top-down approach in program design.
6. **Data Security**: Less emphasis on data security as data is exposed to the whole program.
7. **Examples**: Languages include C, Fortran, and Pascal.

**Object-Oriented Programming (OOP)**

1. **Focus**: OOP focuses on objects, which are instances of classes.
2. **Structure**: Programs are divided into objects that contain both data and methods.
3. **Data**: Data is encapsulated within objects, promoting data integrity and security.
4. **Modularity**: Highly modular as each object operates independently.
5. **Approach**: Follows a bottom-up approach in program design.
6. **Data Security**: Emphasizes data security through encapsulation and access controls.
7. **Examples**: Languages include Java, C++, Python, and Ruby.

**Key Concepts in OOP:**

1. **Encapsulation**: Bundling related data and methods that operate on the data within one unit (class).
2. **Abstraction**: Hiding the complex implementation details and showing only the essential features of the object.
3. **Inheritance**: Creating new classes from existing ones, allowing for code reuse and the creation of a hierarchical relationship.
4. **Polymorphism**: Allowing methods to do different things based on the object it is acting upon, typically achieved through method overloading and overriding.

**Example Comparison**

**Procedure-Oriented Programming (C):**

Example1.c

#include <stdio.h>

int add(int a, int b)

{

return a + b;

}

int main()

{

int result = add(3, 4);

printf("Sum: %d\n", result);

return 0;

}

**Object-Oriented Programming (Java):**

Calculator.java

class Calculator

{

public int add(int a, int b)

{

return a + b;

}

}

public class Main

{

public static void main(String[] args)

{

Calculator calc = new Calculator();

int result = calc.add(3, 4);

System.out.println("Sum: " + result);

}

}

In summary, POP is centered around procedures or functions and is more function-driven, while OOP is centered around objects and classes, promoting better modularity, data security, and reusability.