Code Similarity Analysis Report

Analysis Summary

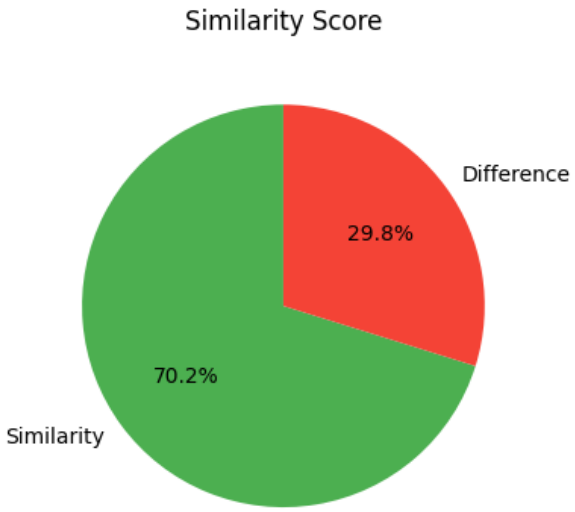
Comparison between: library_system_v1.py and library_system_v2.py

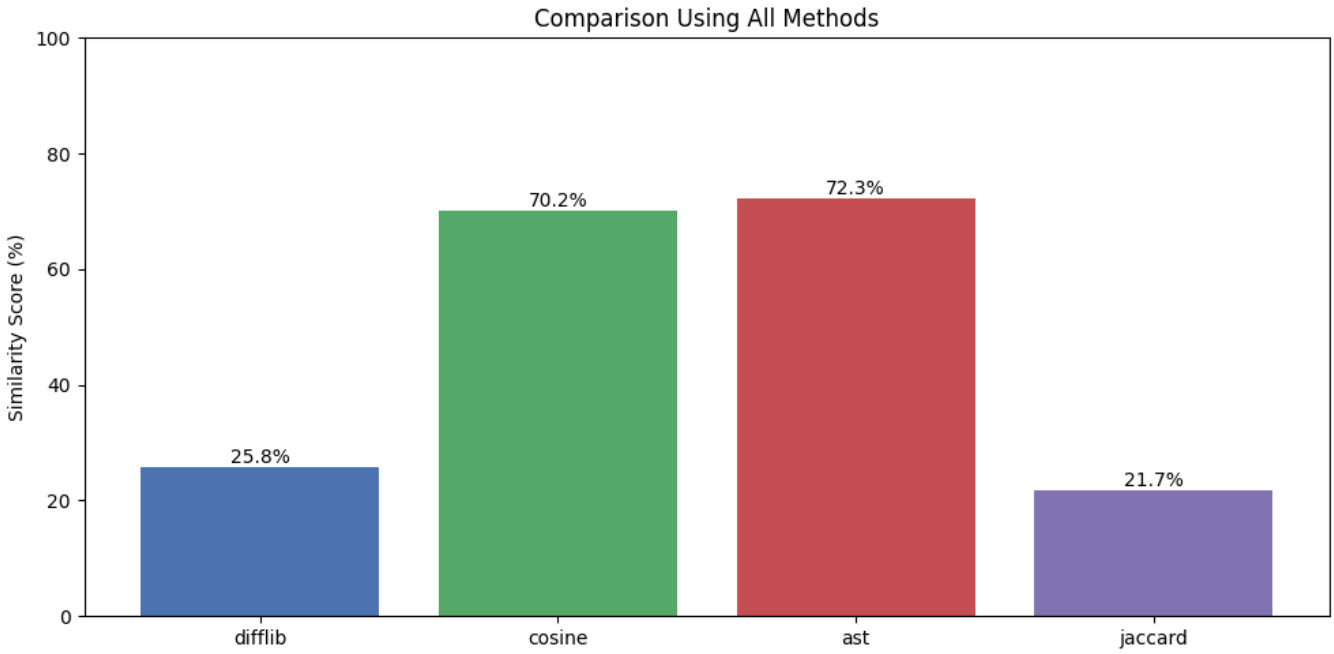
Selected Method: COSINE

Similarity Score: 70.17%

Plagiarism Threshold (70%) Exceeded: Yes

Similarity Visualizations





Code Similarity Report

Preprocessing Details

Before comparison, the following preprocessing steps were applied:

1. All comments were removed

2. All identifiers were normalized (variables ? vN, functions ? fN, etc.)

Original vs Preprocessed Code

Original library_system_v1.py:

```
class Book:
    def __init__(self, book_id, title, author, available=True):
        self.book_id = book_id
        self.title = title
        self.author = author
        self.available = available

    def __str__(self):
        status = 'Available' if self.available else 'Checked Out'
        return f"{self.book_id}: {self.title} by {self.author} ({status})"

class Member:
    def __init__(self, member_id, name):
        self.member_id = member_id
        self.name = name
        self.borrowed_books = []

    def borrow_book(self, book):
        if book.available:
            self.borrowed_books.append(book)
            book.available = False
            return True
        return False

    def return_book(self, book):
        if book in self.borrowed_books:
            self.borrowed_books.remove(book)
            book.available = True
            return True
        return False
# this is comment
class Library:
    def __init__(self):
        self.b...
```

Preprocessed library_system_v1.py:

class c0:

    def __init__(p0, p1, p2, p3, p4=True):

```
        self.book_id = book_id
        self.title = title
        self.author = author
        self.available = available

    def f0(p0):
        v0 = 'Available' if self.available else 'Checked Out'
        return f'{self.book_id}: {self.title} by {self.author} ({status})'

class c1:

    def __init__(p0, p5, p6):
        self.member_id = member_id
        self.name = name
        self.borrowed_books = []

    def f1(p0, p7):
        if book.available:
            self.borrowed_books.append(book)
            book.available = False
            return True
        return False

    def f2(p0, p7):
        if book in self.borrowed_books:
            self.borrowed_books.remove(book)
            book.available = True
            return True
        return False

class c2:

    def __init__(p0):
        self.books = []
        self.members = []

    def f3(p0, p7):
        self.books.append(book)

    def f4(p0, p8):
        self.member...
```

Original library_system_v2.py:

```
class BookItem:
    def __init__(self, id, name, writer):
        self.id = id
        self.name = name
        self.writer = writer
        self.in_stock = True
```

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```
    def __repr__(self):
        status = "In Stock" if self.in_stock else "Out"
        return f"{self.id} - {self.name} ({self.writer}) [{status}]"

class User:
    def __init__(self, uid, full_name):
        self.uid = uid
        self.full_name = full_name
        self.books_checked_out = []

    def checkout(self, book):
        if book.in_stock:
            self.books_checked_out.append(book)
            book.in_stock = False
            return f"{book.name} borrowed."
        return "Not available."

    def checkin(self, book):
        if book in self.books_checked_out:
            self.books_checked_out.remove(book)
            book.in_stock = True
            return f"{book.name} returned."
        return "Book not in record."

class LibraryManager:
    def __init__(self):
        sel...
```

Preprocessed library_system_v2.py:

```
class c0:

    def __init__(p0, p1, p2, p3):
        self.id = id
        self.name = name
        self.writer = writer
        self.in_stock = True

    def f0(p0):
        v0 = 'In Stock' if self.in_stock else 'Out'
        return f'{self.id} - {self.name} ({self.writer}) [{status}]'

class c1:

    def __init__(p0, p4, p5):
        self.uid = uid
        self.full_name = full_name
        self.books_checked_out = []

    def f1(p0, p6):
        if book.in_stock:
            self.books_checked_out.append(book)
```

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```
            book.in_stock = False
            return f'{book.name} borrowed.'
        return 'Not available.'

    def f2(p0, p6):
        if book in self.books_checked_out:
            self.books_checked_out.remove(book)
            book.in_stock = True
            return f'{book.name} returned.'
        return 'Book not in record.'

class c2:

    def __init__(p0):
        self.catalog = []
        self.users = {}

    def f3(p0, p6):
        self.catalog.append(book)

    de...
```

Detailed Differences (Preprocessed Code)

```
--- file1
+++ file2
@@ -1,81 +1,85 @@
 class c0:

-    def __init__(p0, p1, p2, p3, p4=True):
-        self.book_id = book_id
-        self.title = title
-        self.author = author
-        self.available = available
+    def __init__(p0, p1, p2, p3):
+        self.id = id
+        self.name = name
+        self.writer = writer
+        self.in_stock = True

     def f0(p0):
-        v0 = 'Available' if self.available else 'Checked Out'
-        return f'{self.book_id}: {self.title} by {self.author} ({status})'
+        v0 = 'In Stock' if self.in_stock else 'Out'
+        return f'{self.id} - {self.name} ({self.writer}) [{status}]'

 class c1:

-    def __init__(p0, p5, p6):
-        self.member_id = member_id
```

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```
-        self.name = name
-        self.borrowed_books = []
+    def __init__(p0, p4, p5):
+        self.uid = uid
+        self.full_name = full_name
+        self.books_checked_out = []

-    def f1(p0, p7):
-        if book.available:
-            self.borrowed_books.append(book)
-            book.available = False
-            return True
-        return False
+    def f1(p0, p6):
+        if book.in_stock:
+            self.books_checked_out.append(book)
+            book.in_stock = False
+            return f'{book.name} borrowed.'
+        return 'Not available.'

-    def f2(p0, p7):
-        if book in self.borrowed_books:
-            self.borrowed_books.remove(book)
-            book.available = True
-            return True
-        return False
+    def f2(p0, p6):
+        if book in self.books_checked_out:
+            self.books_checked_out.remove(book)
+            book.in_stock = True
+            return f'{book.name} returned.'
+        return 'Book not in record.'

 class c2:

     def __init__(p0):
-        self.books = []
-        self.members = []
+        self.catalog = []
+        self.users = {}

-    def f3(p0, p7):
-        self.books.append(book)
+    def f3(p0, p6):
+        self.catalog.append(book)

-    def f4(p0, p8):
-        self.members.append(member)
+    def f4(p0, p7):
+        self.users[user.uid] = user
```

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```
     def f5(p0, p1):
-        return next((b for v1 in self.books if b.book_id == book_id), None)
+        for v1 in self.catalog:
+            if b.id == id:
+                return b
+        return None

-    def f6(p0, p5):
-        return next((m for v2 in self.members if m.member_id == member_id), None)
+    def f6(p0, p4):
+        return self.users.get(uid)

     def f7(p0):
-        return [str(book) for v3 in self.books]
+        return [repr(b) for v1 in self.catalog]

     def f8(p0):
-        return [f'{m.member_id}: {m.name}' for v2 in self.members]
+        return [f'{uid}: {u.full_name}' for v2, v3 in self.users.items()]

-    def f1(p0, p5, p1):
-        v4 = self.find_member_by_id(member_id)
-        v3 = self.find_book_by_id(book_id)
-        if member and book:
-            return member.borrow_book(book)
-        return False
+    def f9(p0, p4, p8):
+        v4 = self.search_user(uid)
+        v5 = self.search_book(bid)
+        if user and book:
+            return user.checkout(book)
+        return 'User or Book not found.'

-    def f2(p0, p5, p1):
-        v4 = self.find_member_by_id(member_id)
-        v3 = self.find_book_by_id(book_id)
-        if member and book:
-            return member.return_book(book)
-        return False
+    def f10(p0, p4, p8):
+        v4 = self.search_user(uid)
+        v5 = self.search_book(bid)
+        if user and book:
+            return user.checkin(book)
+        return 'Invalid return attempt.'
 if __name__ == '__main__':
-    v5 = Library()
-    library.add_book(Book(101, '1984', 'George Orwell'))
-    library.add_book(Book(102, 'To Kill a Mockingbird', 'Harper Lee'))
-    library.register_member(Member(1, 'Alice'))
-    library.register_member(Member(2, 'Bob'))
```

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```
-     print('Books in library:')
-     print('\n'.join(library.list_books()))
-     library.borrow_book(1, 101)
-     print('\nBooks after borrowing:')
-     print('\n'.join(library.list_books()))
+     v6 = LibraryManager()
+     manager.insert_book(BookItem(201, 'The Hobbit', 'J.R.R. Tolkien'))
+     manager.insert_book(BookItem(202, 'Fahrenheit 451', 'Ray Bradbury'))
+     manager.enroll_user(User(11, 'Charlie'))
+     manager.enroll_user(User(12, 'Dana'))
+     print('Available books:')
+     print('\n'.join(manager.show_all_books()))
+     print('\nIssuing book to Charlie:')
+     print(manager.issue_book(11, 201))
+     print('\nCurrent books:')
+     print('\n'.join(manager.show_all_books()))
```