

```
def remove_duplicates(lst):
```

```
    result = []
```

```
    for item in lst:
```

```
        if item not in result:
```

```
            result.append(item)
```

```
    return result
```

```
def both_cricket_and_badminton(cricket, badminton):
```

```
    result = []
```

```
    for student in cricket:
```

```
        if student in badminton:
```

```
            result.append(student)
```

```
    return result
```

```
def either_cricket_or_badminton_not_both(cricket, badminton):
```

```
    result = []
```

```
    for student in cricket:
```

```
        if student not in badminton:
```

```
            result.append(student)
```

```
    for student in badminton:
```

```
        if student not in cricket:
```

```
            result.append(student)
```

```
    return result
```

```
def neither_cricket_nor_badminton(all_students, cricket, badminton):
```

```
    result = []
```

```
    for student in all_students:
```

```
        if student not in cricket and student not in badminton:
```

```
            result.append(student)
```

```
    return result
```

```
def cricket_and_football_not_badminton(cricket, football, badminton):
```

```

result = []

for student in cricket:

    if student in football and student not in badminton:

        result.append(student)

return result


# Sample data
all_students = ['Alice', 'Bob', 'Charlie', 'David', 'Eve', 'Frank']
cricket = ['Alice', 'Bob', 'Charlie', 'Alice'] # Duplicate Alice
badminton = ['Bob', 'David', 'Eve', 'Bob']    # Duplicate Bob
football = ['Charlie', 'Eve', 'Frank', 'Charlie'] # Duplicate Charlie


# Remove duplicates
cricket = remove_duplicates(cricket)
badminton = remove_duplicates(badminton)
football = remove_duplicates(football)


# 1. List of students who play both cricket and badminton
both_cb = both_cricket_and_badminton(cricket, badminton)
print("Students who play both cricket and badminton:", both_cb)


# 2. List of students who play either cricket or badminton but not both
either_cb_not_both = either_cricket_or_badminton_not_both(cricket, badminton)
print("Students who play either cricket or badminton but not both:", either_cb_not_both)


# 3. Number of students who play neither cricket nor badminton
neither_cb = neither_cricket_nor_badminton(all_students, cricket, badminton)
print("Number of students who play neither cricket nor badminton:", len(neither_cb))


# 4. Number of students who play cricket and football but not badminton
cricket_football_not_badminton = cricket_and_football_not_badminton(cricket, football, badminton)
print("Students who play cricket and football but not badminton:", cricket_football_not_badminton)

```