Introduction:

Run the Python program i.e, PolyWithText.py, provide the polygon vertex manually or via file input. Once the Polygons are drawn then we have to choose the Algebra options like UNION, INTERSECTION or DIFFERENCE. Verify the result and conclude the program.

1. Provide polygon name as P1

    - Select the choice as 1 to Add polygon
    - Data entering choice as “file” i.e, f
    - Path as “D:\learning\python\manojproject\P1.txt”
        - **Note:** Absolute path provided i.e, Full path include path & file name with extension.

```
PS D:\learning\python\manojproject> py .\PolyWithText.py

1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine
 u/U - Union
 i/I - Intersection
 d/D - Difference
5. Quit
Choice: 1
Enter polygon name: P1
Enter 'k' for keyboard, 'f' for file: f
Filename: D:\learning\python\manojproject\P1.txt
Press Enter to continue...
```

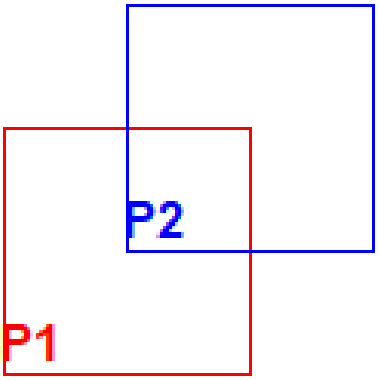
Outcome:

“**polygons**” array defined in the MAIN method as a global variable, which holds the polygons by its name.

2. Provide 2nd Polygon i.e, P2

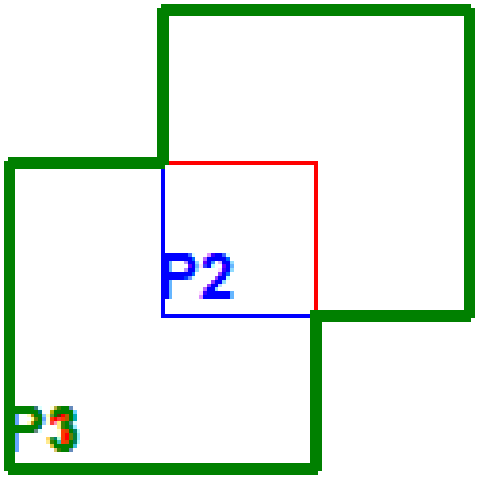
```
1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine
 u/U - Union
 i/I - Intersection
 d/D - Difference
5. Quit
Choice: 1
Enter polygon name: P2
Enter 'k' for keyboard, 'f' for file: f
Filename: D:\learning\python\manojproject\P2.txt
Press Enter to continue...
```

3. Verify the result



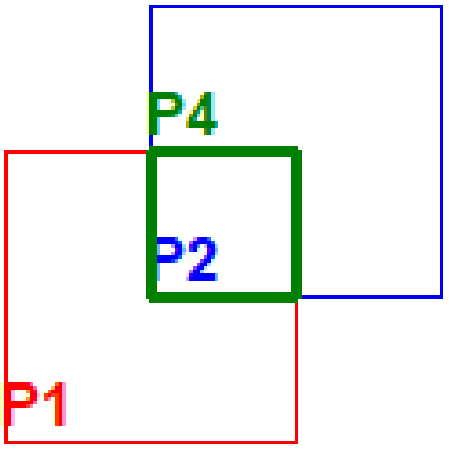
4. Combine using **UNION** operation

```
1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine
 u/U - Union
 i/I - Intersection
 d/D - Difference
5. Quit
Choice: 4
['P1', 'P2']
Enter operation (u/U - Union/ i/I - Intersection/ d/D - Difference): u
Name first polygon: P1
Name second polygon: P2
Result polygon name: P3
Union operation completed. Result polygon 'P3' has 8 vertices.
Press Enter to continue...
```



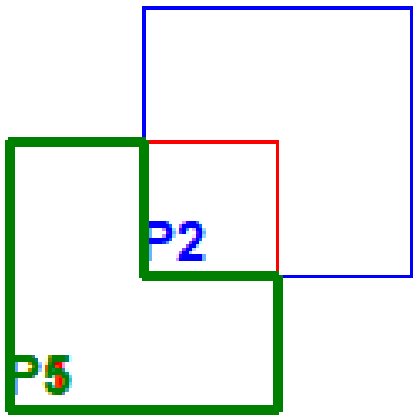
5. Combine using **INTERSECTION** operation

```
1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine
 u/U - Union
 i/I - Intersection
 d/D - Difference
5. Quit
Choice: 4
['P1', 'P2']
Enter operation (u/U - Union/ i/I - Intersection/ d/D - Difference): i
Name first polygon: P1
Name second polygon: P2
Result polygon name: P4
Intersection operation completed. Result polygon 'P4' has 4 vertices.
Press Enter to continue...
```



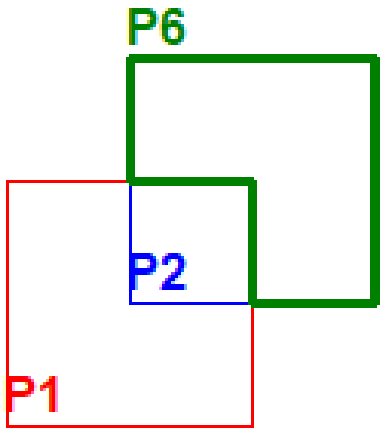
6. Combine using **DIFFERENCE** operation (P1 - P2)

```
1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine (union/intersection/difference)
5. Remove polygon
6. Quit
Choice: 4
['P1', 'P2']
Enter operation (u/U - Union/ i/I - Intersection/ d/D - Difference): d
Difference from ? P1
Difference with ? P2
Result polygon name: P5
Difference operation completed. Result polygon 'P5' has 6 vertices.
Press Enter to continue...
```



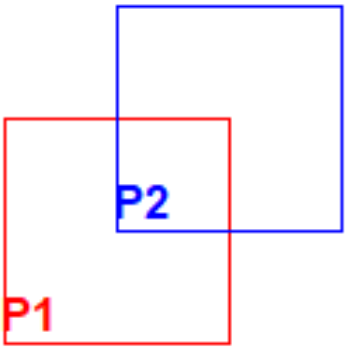
7. Combine using **DIFFERENCE** operation (P2 - P1)

```
1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine (union/intersection/difference)
5. Remove polygon
6. Quit
Choice: 4
['P1', 'P2']
Enter operation (u/U - Union/ i/I - Intersection/ d/D - Difference): d
Difference from ? P2
Difference with ? P1
Result polygon name: P6
Difference operation completed. Result polygon 'P6' has 6 vertices.
Press Enter to continue...
```



8. Remove Polygon

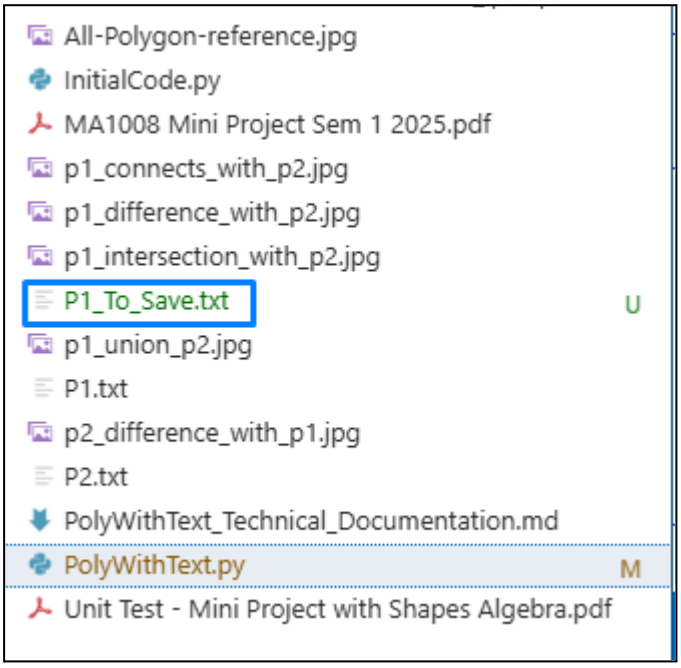
```
1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine (union/intersection/difference)
5. Remove polygon
6. Quit
Choice: 5
Available polygons: ['P1', 'P2', 'P6']
Enter polygon name to remove: P6
Polygon 'P6' has been removed.
Press Enter to continue...
```



9. Save Polygon to File

```
1. Add polygon (keyboard/file)
2. Save polygon to file
3. Show polygons
4. Combine (union/intersection/difference)
5. Remove polygon
6. Quit
Choice: 2
['P1', 'P2']
Enter polygon name to save: P1
Enter filename: D:\learning\python\manojproject\P1_To_Save.txt
Press Enter to continue...
```

Once the Polygon saved into a file which is available in the explorer.



Note: We can provide the PATH wherever we need to store the file. As per this example, we have provided a path same as the Python project and its relevant files present.