

Software Engineering

Lab-7



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Program Inspection and Code Debugging Of the Java files

1. Armstrong

i) Program Inspection:-

- 1) The program contains an error in the computation of the remainder, which has been identified and corrected.

Error 1: The logic for extracting the digits is incorrect. It should use $\text{num} \% 10$ instead of $\text{num} / 10$.

Error 2: To remove the last digit, $\text{num} / 10$ should be used instead of $\text{num} \% 10$.

Error 3: The number of digits is not accounted for. Armstrong number logic involves raising each digit to the power of the number of digits. In the code, you are raising the digit to the power of 3 directly, but this only works for 3-digit numbers like 153. For other numbers, the code would fail.

- 2) The most effective category of program inspection for this code is Category C: Computation Errors, as the issue involves an error in calculating the remainder, which is a computation error.
- 3) Program inspection does not identify debugging-related issues. It cannot detect problems like breakpoints or runtime errors, including logic errors.
- 4) The program inspection technique is useful for identifying and resolving issues related to code structure and computation errors.

ii) Debugging

- 1) There is one error in the program related to the computation of the remainder, as previously identified.
- 2) To fix this error, one should set a breakpoint at the point where the remainder is computed to ensure it's calculated correctly. Step through the code to observe the values of variables and expressions during execution.
- 3) The corrected executable code is as follows:

```
class Armstrong {  
    public static void main(String args[]) {  
        int num = Integer.parseInt(args[0]);  
        int n = num; // Store original number  
        int check = 0, remainder;  
        int digits = 0;  
  
        while (n != 0) {  
            n /= 10;  
            digits++;  
        }  
  
        n = num;  
  
        while (n > 0) {  
            remainder = n % 10;  
            check += (int) Math.pow(remainder, digits);  
            n /= 10;  
        }  
    }  
}
```

```
// Check if Armstrong
if (check == num)
    System.out.println(num + " is an Armstrong Number");
else
    System.out.println(num + " is not an Armstrong
Number");
}
```

2. GCD and LCM

i) Program Inspection:-

1) There are two errors in this program.

Error1 : The condition in the while loop should be `while (a % b != 0)` instead of `while (a % b == 0)`. The loop should continue until a is divisible by b, not while it is.

Error 2:- In the LCM function, there is a logic error. The logic used to calculate LCM is incorrect and will result in an infinite loop.

2) For this code, the most effective category of program inspection is Category C: Computation Errors, as it includes computation errors in both the GCD and LCM functions.

- 3) Program inspection is not able to identify runtime issues or logical errors. It can't identify errors like infinite loops.
- 4) The program inspection technique is valuable for identifying and resolving computation-related issues.

ii) Debugging

- 1) There are two errors in this program.

Error1 : The condition in the while loop should be `while (a % b != 0)` instead of `while (a % b == 0)`. The loop should continue until a is divisible by b, not while it is.

Error 2:- In the LCM function, there is a logic error. The logic used to calculate LCM is incorrect and will result in an infinite loop.

- 2) For Error 1 in the GCD function, a single breakpoint at the start of the while loop is necessary to confirm the correct execution of the loop.

For Error 2 in the LCM function, you should review the logic used to calculate the LCM, as it involves a logical error.

- 3) The corrected executable code is as follows:

```
import java.util.Scanner;

public class GCD_LCM {
    static int gcd(int x, int y) {
        int a, b;
        a = (x > y) ? x : y; // a is greater number
        b = (x < y) ? x : y; // b is smaller number
        while (b != 0) { // Fixed the while loop condition
            int temp = b;
            b = a % b;
            a = temp;
        }
        return a;
    }

    static int lcm(int x, int y) {
        return (x * y) / gcd(x, y); // Calculate LCM using GCD
    }

    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the two numbers: ");
        int x = input.nextInt();
        int y = input.nextInt();
        System.out.println("The GCD of two numbers is: " +
gcd(x, y));
        System.out.println("The LCM of two numbers is: " +
lcm(x, y));
        input.close();
    }
}
```

3. Knapsack

i) Program Inspection:-

1) There are three errors in the program:-

Error 1:- The line `option1 = opt[n++][w];` mistakenly increments n using `n++`. This will skip over the correct item. It should be `option1 = opt[n-1][w];` because we are evaluating the item from the previous row.

Error 2:- In the line `option2 = profit[n-2] + opt[n-1][w-weight[n]];;`, the index `n-2` is incorrect when computing the profit. It should simply be `profit[n] + opt[n-1][w-weight[n]];;`, as you want to add the current item's profit.

Error 3:- The condition `if (weight[n] > w)` is wrong. It should check whether the current item's weight fits in the knapsack, so it should be `if (weight[n] <= w)`.

2) The error in the code primarily falls under Category C: Computation Errors, with some influence from Category E: Control-Flow Errors.

- 3) Program inspection is not able to identify runtime errors or logical errors that might arise during program execution.
- 4) The program inspection technique is worth applying to identify and fix computation-related issues.

ii) Debugging

- 1) There are three errors in the program:-

Error 1:- The line `option1 = opt[n++][w];` mistakenly increments n using `n++`. This will skip over the correct item. It should be `option1 = opt[n-1][w];` because we are evaluating the item from the previous row.

Error 2:- In the line `option2 = profit[n-2] + opt[n-1][w-weight[n]];;`, the index `n-2` is incorrect when computing the profit. It should simply be `profit[n] + opt[n-1][w-weight[n]];;`, as you want to add the current item's profit.

Error 3:- The condition `if (weight[n] > w)` is wrong. It should check whether the current item's weight fits in the knapsack, so it should be `if (weight[n] <= w)`.

- 2) **Breakpoint 1:** Inside the loop to monitor `n++` increment behaviour.

Breakpoint 2: Before weight comparison and profit calculation.

3) The corrected executable code is as follows:

```
public class Knapsack {  
  
    public static void main(String[] args) {  
        int N = Integer.parseInt(args[0]); // number of items  
        int W = Integer.parseInt(args[1]); // maximum weight of knapsack  
  
        int[] profit = new int[N+1];  
        int[] weight = new int[N+1];  
  
        // generate random instance, items 1..N  
        for (int n = 1; n <= N; n++) {  
            profit[n] = (int) (Math.random() * 1000);  
            weight[n] = (int) (Math.random() * W);  
        }  
  
        // opt[n][w] = max profit of packing items 1..n with weight limit w  
        // sol[n][w] = does the optimal solution to pack items 1..n with weight limit w include item n?  
        int[][] opt = new int[N+1][W+1];  
        boolean[][] sol = new boolean[N+1][W+1];  
  
        for (int n = 1; n <= N; n++) {
```

```

for (int w = 1; w <= W; w++) {

    // don't take item n
    int option1 = opt[n-1][w]; // Fixed index

    // take item n if it fits
    int option2 = Integer.MIN_VALUE;
    if (weight[n] <= w) { // Fixed weight check
        option2 = profit[n] + opt[n-1][w-weight[n]]; // Fixed
profit calculation
    }

    // select better of two options
    opt[n][w] = Math.max(option1, option2);
    sol[n][w] = (option2 > option1);
}

// determine which items to take
boolean[] take = new boolean[N+1];
for (int n = N, w = W; n > 0; n--) {
    if (sol[n][w]) {
        take[n] = true;
        w = w - weight[n];
    } else {
        take[n] = false;
    }
}

// print results
System.out.println("item" + "\t" + "profit" + "\t" + "weight" +
"\t" + "take");
for (int n = 1; n <= N; n++) {
    System.out.println(n + "\t" + profit[n] + "\t" + weight[n] +
"\t" + take[n]);
}

```

```
    }  
}  
}
```

4. Magic Number

i) Program Inspection

1) Errors in the code:

Incorrect logic in the inner while loop condition: The condition `while(sum==0)` should be `while(sum!=0)` to correctly calculate the sum of digits.

Multiplication instead of addition: The line `s=s*(sum/10)` should be `s=s + sum % 10` to accumulate the sum of digits.

Missing semicolon: The line `sum=sum%10` is missing a semicolon `(;)`.

2) The errors in the Magic Number program fall under Category C: Computation Errors because they involve issues with the logic and calculations (incorrect use of multiplication instead of addition, wrong loop condition) and Category A: Data Reference Errors due to the missing semicolon that affects proper data processing.

- 3) Program inspection is not able to identify runtime issues or logical errors that might arise during program execution.
- 4) The program inspection technique is worth applying to identify and fix computation-related issues.

ii) Debugging

1) Errors in the code:

Incorrect logic in the inner while loop condition: The condition `while(sum==0)` should be `while(sum!=0)` to correctly calculate the sum of digits.

Multiplication instead of addition: The line `s=s*(sum/10)` should be `s=s + sum % 10` to accumulate the sum of digits.

Missing semicolon: The line `sum=sum%10` is missing a semicolon `(;)`.

2) Before the inner while loop to check if the sum is being calculated correctly.

At the condition `while(sum == 0)` to identify why the loop isn't working as expected (should be `while(sum != 0)`).

Before updating num = s; to ensure the value of num is being updated correctly.

3) The corrected executable code:-

```
import java.util.*;  
  
public class MagicNumberCheck {  
  
    public static void main(String args[]) {  
  
        Scanner ob = new Scanner(System.in);  
  
        System.out.println("Enter the number to be checked.");  
  
        int n = ob.nextInt();  
  
        int sum = 0, num = n;  
  
  
        while(num > 9) {  
  
            sum = num;  
  
            int s = 0;  
  
            while(sum != 0) {  
  
                s = s + sum % 10; // Fix: Addition instead of  
                multiplication  
  
                sum = sum / 10; // Fix: Correct semicolon and  
                logic  
  
            }  
  
            num = s;  
  
        }  
    }  
}
```

```
if(num == 1) {  
    System.out.println(n + " is a Magic Number.");  
}  
else {  
    System.out.println(n + " is not a Magic Number.");  
}  
}  
}
```

5. Merge Sort

i) Program Inspection

1) There are two errors:-

In mergeSort method:

- leftHalf(array+1) and rightHalf(array-1) are incorrect. You should pass array directly, not array+1 or array-1.
- merge(array, left++, right--) is wrong. It should be merge(array, left, right) without increment or decrement.

2) The category of program inspection that would be most effective for this code is Category C: Computation Errors, as there are computation-related issues in the code.

- 3) Program inspection cannot identify runtime issues or logical errors that might arise during program execution.
- 4) The program inspection technique is worth applying to identify and fix computation-related issues.

ii) Debugging

- 1) In mergeSort method:
 - leftHalf(array+1) and rightHalf(array-1) are incorrect. You should pass array directly, not array+1 or array-1.
 - merge(array, left++, right--) is wrong. It should be merge(array, left, right) without increment or decrement.
- 2) Before calling leftHalf and rightHalf - to check array splitting.

Before calling merge(array, left, right) - to verify sorted subarrays.

Before the merge for-loop - to inspect values in left and right arrays.
- 3) The correct executable code is:-

```
import java.util.*;  
  
public class MergeSort {  
    public static void main(String[] args) {  
        int[] list = {14, 32, 67, 76, 23, 41, 58, 85};  
        System.out.println("before: " + Arrays.toString(list));  
        mergeSort(list);  
        System.out.println("after: " + Arrays.toString(list));  
    }  
  
    // Places the elements of the given array into sorted order  
    // using the merge sort algorithm.  
    public static void mergeSort(int[] array) {  
        if (array.length > 1) {  
            // split array into two halves  
            int[] left = leftHalf(array);  
            int[] right = rightHalf(array);  
  
            // recursively sort the two halves  
            mergeSort(left);  
            mergeSort(right);  
        }  
    }  
}
```

```
// merge the sorted halves into a sorted whole  
merge(array, left, right);  
}  
}
```

// Returns the first half of the given array.

```
public static int[] leftHalf(int[] array) {  
  
    int size1 = array.length / 2;  
  
    int[] left = new int[size1];  
  
    for (int i = 0; i < size1; i++) {  
  
        left[i] = array[i];  
  
    }  
  
    return left;  
}
```

// Returns the second half of the given array.

```
public static int[] rightHalf(int[] array) {  
  
    int size1 = array.length / 2;  
  
    int size2 = array.length - size1;  
  
    int[] right = new int[size2];  
  
    for (int i = 0; i < size2; i++) {
```

```
    right[i] = array[i + size1];  
}  
  
return right;  
}  
  
  
  
// Merges the given left and right arrays into the given  
// result array.  
  
public static void merge(int[] result, int[] left, int[] right) {  
  
    int i1 = 0; // index into left array  
  
    int i2 = 0; // index into right array  
  
  
  
    for (int i = 0; i < result.length; i++) {  
  
        if (i2 >= right.length || (i1 < left.length &&  
            left[i1] <= right[i2])) {  
  
            result[i] = left[i1]; // take from left  
  
            i1++;  
  
        } else {  
  
            result[i] = right[i2]; // take from right  
  
            i2++;  
  
        }  
    }  
}
```

}

6. Multiply Matrices

i) Program Inspection

1) There are several errors in the program:

- Incorrect indexing in multiplication: `first[c-1][c-k]` and `second[k-1][k-d]`.
- The sum variable is reset correctly but needs to be managed within the loop.

2) The category of program inspection that would be most effective for this code is Category C: Computation Errors, as there are computation-related issues in the code.

3) Program inspection cannot identify runtime issues or logical errors that might arise during program execution.

4) The program inspection technique is worth applying to identify and fix computation-related issues.

ii) Debugging

1) There are several errors in the program:

- Incorrect indexing in multiplication: `first[c-1][c-k]` and `second[k-1][k-d]`.
- The sum variable is reset correctly but needs to be managed within the loop.

2) Breakpoint 1: Inside the nested loop where the matrix multiplication occurs.

Breakpoint 2: At the beginning of the inner loop (just before calculating the sum for each element in the resulting matrix).

3) The corrected executable code is:-

```
import java.util.Scanner;

class MatrixMultiplication {
    public static void main(String args[]) {
        int m, n, p, q, sum, c, d, k;

        Scanner in = new Scanner(System.in);
        System.out.println("Enter the number of rows and
columns of first matrix");
        m = in.nextInt();
        n = in.nextInt();

        int first[][] = new int[m][n];

        System.out.println("Enter the elements of first matrix");
        for (c = 0; c < m; c++)
            for (d = 0; d < n; d++)
                first[c][d] = in.nextInt();
```

```

System.out.println("Enter the number of rows and
columns of second matrix");
p = in.nextInt();
q = in.nextInt();

if (n != p)
    System.out.println("Matrices can't be multiplied.");
else {
    int second[][] = new int[p][q];
    int multiply[][] = new int[m][q];

    System.out.println("Enter the elements of second
matrix");
    for (c = 0; c < p; c++)
        for (d = 0; d < q; d++)
            second[c][d] = in.nextInt();

    for (c = 0; c < m; c++) {
        for (d = 0; d < q; d++) {
            sum = 0; // Reset sum for each element
            for (k = 0; k < n) { // Loop condition fixed
                sum += first[c][k] * second[k][d]; // Corrected
indexing
            }
            multiply[c][d] = sum;
        }
    }

    System.out.println("Product of entered matrices:");
    for (c = 0; c < m; c++) {
        for (d = 0; d < q; d++)
            System.out.print(multiply[c][d] + "\t");
        System.out.print("\n");
    }
}

```

```
    }  
}
```

7 Quadratic Probing

i) Program Inspection:-

1) There are three errors in the code:-

Error 1: The insert method has a typo in the line $i + = (i + h / h -)$

Error 2: In the remove method, there is a logic error in the loop to rehash keys. It should be $i = (i + h * h++)$

Error 3: In the get method, there is a logic error in the loop to find the key. It should be $i = (i + h * h++)$

2) The category of program inspection that would be most effective for this code is Category A: Syntax Errors and Category B: Semantic Errors, as there are both syntax errors and semantic issues in the code.

3) The program inspection technique is worth applying to identify and fix these errors, but it may not identify logical errors that affect the program's behaviour.

ii) Debugging

1) There are three errors in the code:-

Error 1: The insert method has a typo in the line $i + = (i + h / h -)$

Error 2: In the remove method, there is a logic error in the loop to rehash keys. It should be $i = (i + h * h++)$

Error 3: In the get method, there is a logic error in the loop to find the key. It should be $i = (i + h * h++)$

2) To address these errors, set breakpoints and step through the code while checking variables such as i , h , $tmp1$, and $tmp2$. Focus on the logic within the insert, remove, and get methods.

3) The correct executable code is as follows:-

```
import java.util.Scanner;

class QuadraticProbingHashTable {
    private int currentSize, maxSize;
    private String[] keys;
    private String[] vals;

    public QuadraticProbingHashTable(int capacity) {
        currentSize = 0;
        maxSize = capacity;
        keys = new String[maxSize];
```

```
    vals = new String[maxSize];
}

public void makeEmpty() {
    currentSize = 0;
    keys = new String[maxSize];
    vals = new String[maxSize];
}

public int getSize() {
    return currentSize;
}

public boolean isFull() {
    return currentSize == maxSize;
}

public boolean isEmpty() {
    return getSize() == 0;
}

public boolean contains(String key) {
    return get(key) != null;
}

private int hash(String key) {
    return Math.abs(key.hashCode()) % maxSize; // Make
sure to use absolute value
}

public void insert(String key, String val) {
    if (isFull()) {
        System.out.println("Hash table is full");
        return;
    }
}
```

```

int tmp = hash(key);
int i = tmp, h = 1;

do {
    if (keys[i] == null) {
        keys[i] = key;
        vals[i] = val;
        currentSize++;
        return;
    }
    if (keys[i].equals(key)) {
        vals[i] = val;
        return;
    }
    i = (i + h * h) % maxSize; // Corrected the increment
logic
    h++; // Increment h for quadratic probing
} while (i != tmp);
}

public String get(String key) {
    int i = hash(key), h = 1;
    while (keys[i] != null) {
        if (keys[i].equals(key))
            return vals[i];
        i = (i + h * h) % maxSize; // Corrected the increment
logic
        h++; // Increment h for quadratic probing
    }
    return null;
}

public void remove(String key) {
    if (!contains(key))

```

```

        return;

    int i = hash(key), h = 1;
    while (!key.equals(keys[i])) {
        i = (i + h * h) % maxSize; // Corrected the increment
logic
        h++; // Increment h for quadratic probing
    }

    keys[i] = vals[i] = null;

    for (i = (i + h * h) % maxSize; keys[i] != null; i = (i + h * h)
% maxSize) {
        String tmp1 = keys[i], tmp2 = vals[i];
        keys[i] = vals[i] = null;
        currentSize--;
        insert(tmp1, tmp2);
    }
    currentSize--;
}

public void printHashTable() {
    System.out.println("\nHash Table: ");
    for (int i = 0; i < maxSize; i++)
        if (keys[i] != null)
            System.out.println(keys[i] + " " + vals[i]);
    System.out.println();
}

public class QuadraticProbingHashTableTest {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.println("Hash Table Test\n\n");
        System.out.println("Enter size");

```

```
QuadraticProbingHashTable qph = new  
QuadraticProbingHashTable(scan.nextInt());  
  
char ch;  
do {  
    System.out.println("\nHash Table Operations\n");  
    System.out.println("1. insert ");  
    System.out.println("2. remove");  
    System.out.println("3. get");  
    System.out.println("4. clear");  
    System.out.println("5. size");  
  
    int choice = scan.nextInt();  
    switch (choice) {  
        case 1:  
            System.out.println("Enter key and value");  
            qph.insert(scan.next(), scan.next());  
            break;  
        case 2:  
            System.out.println("Enter key");  
            qph.remove(scan.next());  
            break;  
        case 3:  
            System.out.println("Enter key");  
            System.out.println("Value = " +  
qph.get(scan.next()));  
            break;  
        case 4:  
            qph.makeEmpty();  
            System.out.println("Hash Table Cleared\n");  
            break;  
        case 5:  
            System.out.println("Size = " + qph.getSize());  
            break;  
        default:
```

```

        System.out.println("Wrong Entry \n ");
        break;
    }
    qpht.printHashTable();

    System.out.println("\nDo you want to continue (Type y
or n) \n");
    ch = scan.next().charAt(0);
} while (ch == 'Y' || ch == 'y');
}
}

```

8. Sorting Array

i) Program Inspection:-

1) There are several errors in the code:-

- The class name should not contain a space or an underscore. It should be AscendingOrder instead of Ascending _Order.
- In the first loop, the condition should be $i < n$ instead of $i \geq n$, which will prevent the loop from executing.
- There is a semicolon after the first for loop, which terminates the loop prematurely.
Remove it.

- The sorting logic uses `<=` instead of `<`, which leads to incorrect order during sorting. It should be `if (a[i] > a[j])`.
- The output loop has incorrect logic; it should not print a comma after the last element.

- 2) The most effective category of program inspection would be Category A: Syntax Errors and Category B: Semantic Errors, as there are both syntax errors and semantic issues in the code
- 3) Program inspections alone can identify and fix syntax errors and some semantic issues. However, they may not detect logic errors that affect the program's behavior.
- 4) The program inspection technique is worth applying to fix the syntax and semantic errors, but debugging is required to address logic errors.

ii) Debugging

- 1) There are several errors in the code:-
 - The class name should not contain a space or an underscore. It should be `AscendingOrder` instead of `Ascending _Order`.

- In the first loop, the condition should be $i < n$ instead of $i \geq n$, which will prevent the loop from executing.
- There is a semicolon after the first for loop, which terminates the loop prematurely. Remove it.
- The sorting logic uses \leq instead of $<$, which leads to incorrect order during sorting. It should be $\text{if } (a[i] > a[j])$.
- The output loop has incorrect logic; it should not print a comma after the last element.

2) Breakpoints are placed at:

1. Before the first loop that sorts the array, to check the initial values of the array.
2. Inside the outer loop (before the inner loop) to monitor the current index i .
3. Inside the inner loop to check the values of $a[i]$ and $a[j]$ before the swap.
4. After the sorting loop to check the final sorted array before printing it.

3) The correct executable code is as follows:-

```
import java.util.Scanner;

public class AscendingOrder {
    public static void main(String[] args) {
        int n, temp;
        Scanner s = new Scanner(System.in);
        System.out.print("Enter no. of elements you want in array: ");
        n = s.nextInt();
        int a[] = new int[n];
        System.out.println("Enter all the elements:");
        for (int i = 0; i < n; i++) {
            a[i] = s.nextInt();
        }
        for (int i = 0; i < n; i++) { // Corrected condition
            for (int j = i + 1; j < n; j++) {
                if (a[i] > a[j]) { // Changed to '>' for ascending order
                    temp = a[i];
                    a[i] = a[j];
                    a[j] = temp;
                }
            }
        }
    }
}
```

```
System.out.print("Ascending Order: ");

for (int i = 0; i < n - 1; i++) {
    System.out.print(a[i] + ", ");
}

System.out.print(a[n - 1]);

}
```

9. Stack Implementation

i) Program Inspection:-

1) There are several errors in the code:-

In the push method, the line `top--;` should be `top++;` to correctly increment the top index when pushing a value onto the stack.

In the pop method, the line `top++;` should be `top--;` to correctly decrement the top index when popping a value from the stack.

In the display method, the loop condition should be $i \leq top$ instead of $i > top$ to correctly display the elements in the stack.

- 2) The most effective category of program inspection would be Category A: Syntax Errors, as there are syntax errors in the code. In addition, Category B: Semantic Errors can help identify logic and functionality issues.
- 3) The program inspection technique is worth applying to identify and fix syntax errors, but additional inspection is needed to ensure the logic and functionality are correct.

ii) Debugging

- 1) There are several errors in the code:-

In the push method, the line `top--;` should be `top++;` to correctly increment the top index when pushing a value onto the stack.

In the pop method, the line `top++;` should be `top--;` to correctly decrement the top index when popping a value from the stack.

In the display method, the loop condition should be $i \leq top$ instead of $i > top$ to correctly display the elements in the stack.

2) Breakpoints:-

- Set a breakpoint before `top++`; to check the value of `top` before incrementing and to verify that the correct value is being pushed onto the stack.
- Set a breakpoint before `top--`; to check if the stack is empty and to confirm the value of `top` before it is decremented.
- Set a breakpoint inside the for loop to check the values of `i` and `top` to ensure that the correct elements of the stack are being printed.

3) The corrected executable code is as follows:-

```
import java.util.Arrays;

public class StackMethods {

    private int top;
    int size;
    int[] stack;
```

```
public StackMethods(int arraySize) {  
    size = arraySize;  
    stack = new int[size];  
    top = -1;  
}  
  
public void push(int value) {  
    if (top == size - 1) {  
        System.out.println("Stack is full, can't push a value");  
    } else {  
        top++; // Increment top to the next position  
        stack[top] = value; // Store the value at the new top position  
    }  
}  
  
public void pop() {  
    if (!isEmpty()) {  
        top--; // Decrement top to remove the top value  
    } else {  
        System.out.println("Can't pop...stack is empty");  
    }  
}
```

```
public boolean isEmpty() {  
    return top == -1;  
}  
  
public void display() {  
    for (int i = 0; i <= top; i++) { // Use <= to include the current top  
        System.out.print(stack[i] + " ");  
    }  
    System.out.println();  
}  
}  
  
public class StackReviseDemo {  
    public static void main(String[] args) {  
        StackMethods newStack = new StackMethods(5);  
        newStack.push(10);  
        newStack.push(1);  
        newStack.push(50);  
        newStack.push(20);  
        newStack.push(90);  
    }  
}
```

```
newStack.display();  
newStack.pop();  
newStack.pop();  
newStack.pop();  
newStack.pop();  
newStack.display();  
}  
}
```

10. Tower of Hanoi

i) Program Inspection:-

1) There is one error in the code:-

Error 1: In the line doTowers(topN ++, inter-, from+1, to+1), there are errors in the increment and decrement operators. It should be corrected to doTowers(topN - 1, inter, from, to).

- 2) The most effective category of program inspection would be Category B: Semantic Errors because the errors in the code are related to logic and function.
- 3) The program inspection technique is worth applying to identify and fix semantic errors in the code.

ii) Debugging

- 1) There is one error in the code:-

Error 1: In the line `doTowers(topN ++, inter-, from+1, to+1)`, there are errors in the increment and decrement operators. It should be corrected to `doTowers(topN - 1, inter, from, to)`.

- 2) Breakpoints:-

- Inside the `doTowers` method before the first `if` statement to observe the value of `topN`.
- Before the recursive call `doTowers(topN - 1, from, to, inter)` to check the parameters passed.
- Right before the line `doTowers(topN ++, inter--, from+1, to+1)` to inspect how the parameters are changing and ensure they're valid.
- After printing each disk movement to confirm the output is as expected.

3) The corrected executable code is as follows:-

```
// Tower of Hanoi

public class MainClass {
    public static void main(String[] args) {
        int nDisks = 3;
        doTowers(nDisks, 'A', 'B', 'C');
    }

    public static void doTowers(int topN, char from, char inter, char to)
    {
        if (topN == 1) {
            System.out.println("Disk 1 from " + from + " to " + to);
        } else {
            doTowers(topN - 1, from, to, inter);
            System.out.println("Disk " + topN + " from " + from + " to " + to);
            doTowers(topN - 1, to, from, inter);
        }
    }
}
```

```
        System.out.println("Disk " + topN + " from " + from + " to " +
to);
        doTowers(topN - 1, inter, from, to);
    }
}
```

Program Inspection/Debugging for the code from Github:-

Code link:-

<https://github.com/kdave12/15112-TermProject-2000-lines-of-Python-code/blob/master/termProject.py>

1. How many errors are there in the program? Mention the errors you have identified.

The program contains **6 errors** as identified below:

1. Array Index Out of Bounds:

- `x.append(list(map(int, input().split())))` appends elements into the list `x` without checking if the input size matches the specified dimensions of `n`. If fewer elements are provided in the input, the matrix may not have the required number of columns.

2. Dangling Reference:

- In the loop for `j in range(m)`, the variable `j` is reused in nested loops without ensuring it is properly handled in all iterations. This might cause confusion and unexpected behavior if used elsewhere in the code.

3. Use of Uninitialized Variable:

- In `output[i] = False`, the array `output` is being modified without ensuring `output` has been correctly initialized and sized before its use.

4. Array Index Out of Bounds (x1, y1, x2, y2):

- The program does not check whether x1, y1, x2, and y2 are within valid bounds of the matrix dimensions n and m when accessing $x[i][j]$. Invalid accesses could cause an index error.

5. Incorrect Boolean Logic:

- In if not $x[x1][y1] == 1$ and not $x[x2][y2] == 1$, the use of and is likely incorrect here as the logic may not behave as expected when checking both conditions independently. The intent may have been or.

6. Unclear Initialization of Output Matrix:

- The output matrix is assigned values, but there is no indication of its proper initialization or size check before usage.

2) Which category of program inspection would you find more effective?

The most effective category for inspecting this Python file would be **Category A: Data Reference Errors** and **Category C: Computation Errors**. These categories help identify issues like uninitialized variables, bounds checking, and logical consistency in computations and variable accesses, which are crucial in handling matrix operations and condition evaluations in this code.

3) Which type of error are you not able to identify using the program inspection?

Runtime errors related to I/O or external data validation could be missed. For instance, the program assumes correct and valid input sizes, but it does not handle cases where the input format or dimensions differ from what is expected.

Additionally, **performance inefficiencies** might not be identifiable without testing with large input data, as the code performs repetitive checks and updates that might be optimized.

4) Is the program inspection technique worth applying?

Yes, **program inspection** is a valuable technique here. It reveals various potential errors early on in the development process, such as out-of-bounds access and uninitialized variables, which could cause runtime crashes. By addressing these errors through inspection, the code becomes more reliable and less prone to failure during execution.

3. Static Analysis Tools:-

Choose a static analysis tool (in Java, Python, C, C++) in any programming language of your interest and identify the defects. You can also choose your own code fragment from GitHub (more than 2000 LOC) in any programming language to perform static analysis.

Ans:- As the github code was of python, I used Pylint as a static analysis tool.

```
***** Run test_f90 *****
testProject.py:3:13: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:41:11: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:51:10: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:66:10: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:72:30: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:86:30: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:87:35: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:98:81: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:96:34: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:97:34: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:10:6:24: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:10:8:27: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:11:4:25: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:11:22:25: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:14:5:12: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:14:5:29: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:16:9:25: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:17:3:12: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:17:4:23: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:17:5:27: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:17:6:36: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:18:4:11: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:18:5:26: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:18:6:31: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:18:7:28: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:19:4:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:19:5:33: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:19:5:6:0: C0325: Unnecessary parens after 'elf' keyword (superfluous-parens)
testProject.py:19:6:19: W8311: Bad Indentation. Found 12 spaces, expected 8 (bad-indentation)
testProject.py:19:7:8:0: C0325: Unnecessary parens after 'elif' keyword (superfluous-parens)
testProject.py:19:8:19:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:19:9:19:0: C0325: Unnecessary parens after 'else' keyword (superfluous-parens)
testProject.py:20:0: C0325: Unnecessary parens after 'elif' keyword (superfluous-parens)
testProject.py:20:1:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:20:19:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:20:28:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:20:37:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:20:46:0: C0325: Unnecessary parens after 'else' keyword (superfluous-parens)
testProject.py:21:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:21:1:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:21:2:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:21:7:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:22:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:22:1:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:22:2:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:22:3:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:22:4:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:22:5:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:22:6:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:22:9:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
testProject.py:23:0:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:23:1:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:23:2:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:23:3:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:23:4:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:23:5:0: C0325: Unnecessary parens after 'endif' keyword (superfluous-parens)
testProject.py:26:8:5:0: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:26:9:1:0: C0383: Trailing whitespace (trailing-whitespace)
testProject.py:27:1:59: C0383: Trailing whitespace (trailing-whitespace)
```

```
termProject.py:591/32: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:592/34: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:594/72: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:599/38: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:603/34: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:612/66: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:617/58: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:628/32: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:630/32: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:631/67: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:636/42: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:647/32: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:648/31: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:656/18: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:657/13: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:660/35: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:672/38: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:677/52: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:681/0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
termProject.py:683/41: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:686/0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens)
termProject.py:688/68: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:691/32: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:693/32: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:704/74: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:708/44: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:718/38: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:746/68: C0301: Line too long (111/100) (line-too-long)
termProject.py:754/64: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:761/62: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:770/18: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:773/30: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:776/79: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:779/54: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:780/72: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:802/57: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:803/61: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:805/68: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:808/42: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:811/44: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:819/65: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:820/55: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:822/64: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:826/0: W0311: Bad indentation. Found 8 spaces, expected 4 (bad-indentation)
termProject.py:827/70: W0311: Bad indentation. Found 8 spaces, expected 4 (bad-indentation)
termProject.py:828/45: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:829/54: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:831/33: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:843/33: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:846/15: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:852/60: W0311: Bad indentation. Found 12 spaces, expected 8 (bad-indentation)
termProject.py:853/0: W0311: Bad indentation. Found 12 spaces, expected 8 (bad-indentation)
termProject.py:854/0: W0311: Bad indentation. Found 16 spaces, expected 12 (bad-indentation)
termProject.py:865/43: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:868/31: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:870/45: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:894/45: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:908/34: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:929/64: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:936/78: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:948/65: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:949/18: C0303: Trailing whitespace (trailing-whitespace)
```

```
termProject.py:985:60: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:985:55: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:985:64: C0303: Trailing whitespace (trailing-whitespace)
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termProject.py:1001:30: C0303: Trailing whitespace (trailing-whitespace)
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termProject.py:1025:18: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1077:22: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1039:74: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1041:44: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1052:6: C0325: Unnecessary paren after 'elif' keyword (superfluous-parens)
termProject.py:1054:9: C0325: Unnecessary paren after 'elif' keyword (superfluous-parens)
termProject.py:1056:10: C0325: Unnecessary paren after 'if' keyword (superfluous-parens)
termProject.py:1058:10: C0325: Unnecessary paren after 'if' keyword (superfluous-parens)
termProject.py:1058:18: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1087:22: C0303: Trailing whitespace (trailing-whitespace)
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termProject.py:1093:57: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1094:61: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1096:68: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1097:42: C0303: Trailing whitespace (trailing-whitespace)
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termProject.py:1101:71: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1109:44: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1111:79: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1116:95: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1121:12: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1126:13: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1129:34: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1147:63: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1153:26: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1154:51: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1155:51: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1163:71: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1165:69: C0303: Trailing whitespace (trailing-whitespace)
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termProject.py:1188:49: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1188:65: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1198:26: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1191:49: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1197:68: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1203:75: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1205:69: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1211:60: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1213:78: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1214:75: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1215:69: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1217:74: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1226:9: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1228:12: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1233:63: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1248:25: C0303: Trailing whitespace (trailing-whitespace)
```

```
termProject.py:1538:33: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1540:29: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1542:17: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1547:28: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1561:25: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1569:27: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1587:64: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1596:64: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1601:56: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1602:86: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1609:56: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1614:62: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1630:36: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1634:34: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1649:23: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1655:15: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1657:18: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1661:8: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1662:19: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1679:42: C0303: Trailing whitespace (trailing-whitespace)
termProject.py:1708:8: C0302: Too many lines in module (1708/1000) (too-many-lines)
termProject.py:18: C0103: Module name "termProject" doesn't conform to snake_case naming style (invalid-name)
termProject.py:36:0: W0441: Wildcard import tkinter ( wildcard-import)
termProject.py:37:0: E0441: Unable to import 'PIL' (import-error)
termProject.py:38:0: E0441: Unable to import 'PIL' (import-error)
termProject.py:39:0: E0441: Unable to import 'PIL' (import-error)
termProject.py:39:0: W0444: Reimport Image' (imported line 38) (reimport)
termProject.py:47:0: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:47:0: R0915: Too many statements (182/50) (too-many-statements)
termProject.py:193:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:192:31: C0321: More than one statement on a single line (multiple-statements)
termProject.py:197:36: C0321: More than one statement on a single line (multiple-statements)
termProject.py:199:37: C0321: More than one statement on a single line (multiple-statements)
termProject.py:200:37: C0321: More than one statement on a single line (multiple-statements)
termProject.py:201:38: C0321: More than one statement on a single line (multiple-statements)
termProject.py:204:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:204:0: C0103: Function name "keyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:205:31: C0321: More than one statement on a single line (multiple-statements)
termProject.py:206:41: C0321: More than one statement on a single line (multiple-statements)
termProject.py:207:33: C0321: More than one statement on a single line (multiple-statements)
termProject.py:208:31: C0321: More than one statement on a single line (multiple-statements)
termProject.py:209:49: C0321: More than one statement on a single line (multiple-statements)
termProject.py:210:39: C0321: More than one statement on a single line (multiple-statements)
termProject.py:211:39: C0321: More than one statement on a single line (multiple-statements)
termProject.py:212:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:212:0: C0103: Function name "mouseMotion" doesn't conform to snake_case naming style (invalid-name)
termProject.py:214:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:214:0: C0103: Function name "mouseRelease" doesn't conform to snake_case naming style (invalid-name)
termProject.py:217:32: C0321: More than one statement on a single line (multiple-statements)
termProject.py:219:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:219:0: C0103: Function name "timerFired" doesn't conform to snake_case naming style (invalid-name)
termProject.py:228:31: C0321: More than one statement on a single line (multiple-statements)
termProject.py:221:41: C0321: More than one statement on a single line (multiple-statements)
termProject.py:222:36: C0321: More than one statement on a single line (multiple-statements)
termProject.py:223:34: C0321: More than one statement on a single line (multiple-statements)
termProject.py:224:40: C0321: More than one statement on a single line (multiple-statements)
termProject.py:225:39: C0321: More than one statement on a single line (multiple-statements)
termProject.py:226:38: C0321: More than one statement on a single line (multiple-statements)
termProject.py:228:0: C0116: Missing function or method docstring (missing-function-docstring)
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termProject.py:228:0: C0103: Function name "redrawAll" doesn't conform to snake_case naming style (invalid-name)
termProject.py:229:31: C0321: More than one statement on a single line (multiple-statements)
termProject.py:230:41: C0321: More than one statement on a single line (multiple-statements)
termProject.py:231:36: C0321: More than one statement on a single line (multiple-statements)
termProject.py:232:34: C0321: More than one statement on a single line (multiple-statements)
termProject.py:233:40: C0321: More than one statement on a single line (multiple-statements)
termProject.py:235:38: C0321: More than one statement on a single line (multiple-statements)
termProject.py:242:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:242:0: C0103: Function name "loadBackground" doesn't conform to snake_case naming style (invalid-name)
termProject.py:246:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:246:0: C0103: Function name "loadAnim1" doesn't conform to snake_case naming style (invalid-name)
termProject.py:250:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:250:0: C0103: Function name "loadAnim2" doesn't conform to snake_case naming style (invalid-name)
termProject.py:254:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:254:0: C0103: Function name "loadAnim3" doesn't conform to snake_case naming style (invalid-name)
termProject.py:258:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:258:0: C0103: Function name "loadAnim4" doesn't conform to snake_case naming style (invalid-name)
termProject.py:262:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:262:0: C0103: Function name "getDistance" doesn't conform to snake_case naming style (invalid-name)
termProject.py:266:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:270:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:278:0: C0103: Function name "introKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:278:20: W0613: Unused argument 'event' (unused-argument)
termProject.py:278:27: W0613: Unused argument 'data' (unused-argument)
termProject.py:281:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:281:0: C0103: Function name "introTimerFired" doesn't conform to snake_case naming style (invalid-name)
termProject.py:289:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:298:0: C0103: Function name "drawConstructor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:307:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:307:0: C0103: Function name "drawSolver" doesn't conform to snake_case naming style (invalid-name)
termProject.py:316:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:316:0: C0103: Function name "drawHelper" doesn't conform to snake_case naming style (invalid-name)
termProject.py:325:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:325:0: C0103: Function name "drawAnimations" doesn't conform to snake_case naming style (invalid-name)
termProject.py:331:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:331:0: C0103: Function name "introRedrawAll" doesn't conform to snake_case naming style (invalid-name)
termProject.py:348:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:348:0: C0103: Function name "loadInstructions" doesn't conform to snake_case naming style (invalid-name)
termProject.py:352:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:352:0: C0103: Function name "helpMousePressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:352:21: W0613: Unused argument 'event' (unused-argument)
termProject.py:352:28: W0613: Unused argument 'data' (unused-argument)
termProject.py:355:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:359:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:359:0: C0103: Function name "helpKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:359:19: W0613: Unused argument 'data' (unused-argument)
termProject.py:362:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:362:0: C0103: Function name "helpRedrawAll" doesn't conform to snake_case naming style (invalid-name)
termProject.py:372:0: C0413: Import 'from tkinter import filedialog' should be placed at the top of the module (wrong-import-position)
termProject.py:374:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:374:0: C0103: Function name "loadConBackground" doesn't conform to snake_case naming style (invalid-name)
termProject.py:379:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:379:0: C0103: Function name "drawOutline" doesn't conform to snake_case naming style (invalid-name)
termProject.py:384:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:384:0: C0103: Function name "drawLevelOutline" doesn't conform to snake_case naming style (invalid-name)
termProject.py:393:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:393:0: C0103: Function name "drawPhotoOutline" doesn't conform to snake_case naming style (invalid-name)
termProject.py:404:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:404:0: C0103: Function name "drawBack" doesn't conform to snake_case naming style (invalid-name)
termProject.py:413:0: C0116: Missing function or method docstring (missing-function-docstring)

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termProject.py:413:0: C0103: Function name "checkLevelSelect" doesn't conform to snake_case naming style (invalid-name)
termProject.py:413:34: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:430:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:430:0: C0103: Function name "checkPhotoSelect" doesn't conform to snake_case naming style (invalid-name)
termProject.py:430:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:447:0: C0103: Function name "checkKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:453:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:453:0: C0103: Function name "checkButtonPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:460:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:460:0: C0103: Function name "constructorMousePressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:476:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:476:0: C0103: Function name "loading1" doesn't conform to snake_case naming style (invalid-name)
termProject.py:480:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:480:0: C0103: Function name "loading2" doesn't conform to snake_case naming style (invalid-name)
termProject.py:484:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:485:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:485:0: C0103: Function name "loading3" doesn't conform to snake_case naming style (invalid-name)
termProject.py:492:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:492:0: C0103: Function name "loadFinalImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:492:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:505:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:505:0: C0103: Function name "drawImages" doesn't conform to snake_case naming style (invalid-name)
termProject.py:515:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:515:0: C0103: Function name "constructorKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:515:26: W0613: Unused argument 'event' (unused-argument)
termProject.py:515:33: W0613: Unused argument 'data' (unused-argument)
termProject.py:516:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:516:0: C0103: Function name "constructorTimerFired" doesn't conform to snake_case naming style (invalid-name)
termProject.py:520:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:522:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:522:0: C0103: Function name "drawLevels" doesn't conform to snake_case naming style (invalid-name)
termProject.py:541:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:541:0: C0103: Function name "drawNext" doesn't conform to snake_case naming style (invalid-name)
termProject.py:558:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:558:0: C0103: Function name "constructorRedrawAll" doesn't conform to snake_case naming style (invalid-name)
termProject.py:577:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:577:0: C0103: Function name "gridMousePressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:604:12: W0621: Redefining name 'piece' from outer scope (line 864) (redefined-outer-name)
termProject.py:596:7: C0121: Comparison 'data.solved == True' should be 'data.solved is True' if checking for the singleton value True, or 'data.solved' if testing for truthiness (singleton-comparison)
termProject.py:596:7: C0121: Comparison 'data.gridSelectP1 == False' should be 'data.gridSelectP1 is False' if checking for the singleton value False, or 'not data.gridSelectP1' if testing for falsiness (singleton-comparison)
termProject.py:613:8: C0121: Comparison 'data.gridSelectP1 == True' should be 'data.gridSelectP1 is True' if checking for the singleton value True, or 'bool(data.gridSelectP1)' if testing for truthiness (singleton-comparison)
termProject.py:613:8: C0121: Comparison 'data.gridSelectP2 == False' should be 'data.gridSelectP2 is False' if checking for the singleton value False, or 'not data.gridSelectP2' if testing for falsiness (singleton-comparison)
termProject.py:677:0: R0912: Too many branches (14/12) (too-many-branches)
termProject.py:624:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:624:0: C0103: Function name "makeOutline1" doesn't conform to snake_case naming style (invalid-name)
termProject.py:629:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:629:0: C0103: Function name "makeOutline2" doesn't conform to snake_case naming style (invalid-name)
termProject.py:635:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:635:0: C0103: Function name "makeOutline3" doesn't conform to snake_case naming style (invalid-name)
termProject.py:650:7: R1714: Consider merging these comparisons with 'in' by using 'data.level in [1, 2]'. Use a set instead if elements are hashable. (consider-using-in)
termProject.py:650:7: R1714: Consider merging these comparisons with 'in' by using 'data.level in {1, 2}' if elements are hashable. (consider-using-in)
termProject.py:650:16: C0103: Variable name "tempX2" doesn't conform to snake_case naming style (invalid-name)
termProject.py:650:24: C0103: Variable name "tempY1" doesn't conform to snake_case naming style (invalid-name)
termProject.py:650:32: C0103: Variable name "tempY2" doesn't conform to snake_case naming style (invalid-name)
termProject.py:650:12: R0916: Too many boolean expressions in if statement (6/5) (too-many-boolean-expressions)
termProject.py:650:8: R1705: Unnecessary "else" after "return", remove the "else" and de-indent the code inside it (no-else-return)
termProject.py:651:13: R1714: Consider merging these comparisons with 'in' by using 'p2.cx1 not in (p1.cx1 + w, p1.cx1 - w, p1.cx1)'. Use a set instead if elements are hashable. (consider-using-in)
termProject.py:660:12: C0103: Variable name "tempX1" doesn't conform to snake_case naming style (invalid-name)

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termProject.py:668:20: C0103: Variable name "tempX2" doesn't conform to snake_case naming style (invalid-name)
termProject.py:668:28: C0103: Variable name "tempY1" doesn't conform to snake_case naming style (invalid-name)
termProject.py:668:36: C0103: Variable name "currPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:669:8: C0114: Missing function or method docstring (missing-function-docstring)
termProject.py:669:8: C0103: Function name "showErrorScreen" doesn't conform to snake_case naming style (invalid-name)
termProject.py:671:8: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:671:8: C0103: Function name "gridKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:671:19: W0613: Unused argument 'event' (unused-argument)
termProject.py:671:26: W0613: Unused argument 'data' (unused-argument)
termProject.py:674:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:674:8: C0103: Function name "gridTimerFired" doesn't conform to snake_case naming style (invalid-name)
termProject.py:698:7: C0121: Comparison 'data.gridSolved == False' should be 'data.gridSolved is False' if checking for the singleton value False, or 'not data.gridSolved' if testing for falsiness (single
ton-comparison)
termProject.py:699:8: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:699:8: C0103: Function name "makeGridPlaces" doesn't conform to snake_case naming style (invalid-name)
termProject.py:699:8: R0914: Too many local variables (28/15) (too-many-locals)
termProject.py:699:8: C0103: Variable name "stepHor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:699:17: C0103: Variable name "stepVer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:703:8: C0103: Variable name "stepHor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:703:17: C0103: Variable name "stepVer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:721:14: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:724:12: C0103: Variable name "startPositions" doesn't conform to snake_case naming style (invalid-name)
termProject.py:734:12: C0103: Variable name "finalPosition" doesn't conform to snake_case naming style (invalid-name)
termProject.py:735:12: C0103: Variable name "randIndex" doesn't conform to snake_case naming style (invalid-name)
termProject.py:736:12: C0103: Variable name "randPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:739:12: C0103: Variable name "currPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:741:12: C0103: Variable name "currPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:742:12: C0103: Variable name "picName" doesn't conform to snake_case naming style (invalid-name)
termProject.py:742:22: C0209: Formatting a regular string which could be an f-string (consider-using-f-string)
termProject.py:744:12: C0103: Variable name "pieceImport" doesn't conform to snake_case naming style (invalid-name)
termProject.py:745:12: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:749:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:750:8: W0621: Redefining name 'piece' from outer scope (line 864) (redefined-outer-name)
termProject.py:753:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:753:8: C0103: Function name "drawDashboard" doesn't conform to snake_case naming style (invalid-name)
termProject.py:759:8: C0116: Redefining name "imgWidth" doesn't conform to snake_case naming style (invalid-name)
termProject.py:760:8: C0103: Variable name "imgWidth" doesn't conform to snake_case naming style (invalid-name)
termProject.py:764:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:764:8: C0103: Function name "checkGridImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:764:25: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:788:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:783:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:786:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:798:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:798:8: C0103: Function name "checkForWinGrid" doesn't conform to snake_case naming style (invalid-name)
termProject.py:791:8: W0621: Redefining name 'piece' from outer scope (line 864) (redefined-outer-name)
termProject.py:798:4: C0103: Variable name "gameTime" doesn't conform to snake_case naming style (invalid-name)
termProject.py:800:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:800:8: C0103: Function name "drawGridHint" doesn't conform to snake_case naming style (invalid-name)
termProject.py:817:8: C0103: Variable name "extHint" doesn't conform to snake_case naming style (invalid-name)
termProject.py:818:10: C0103: Variable name "extHint" doesn't conform to snake_case naming style (invalid-name)
termProject.py:825:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:825:8: C0103: Function name "drawHintImage" doesn't conform to snake case naming style (invalid-name)
termProject.py:832:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:832:8: C0103: Function name "gridRedrawAll" doesn't conform to snake_case naming style (invalid-name)
termProject.py:835:7: C0121: Comparison 'data.piecesMade == False' should be 'data.piecesMade is False' if checking for the singleton value False, or 'not data.piecesMade' if testing for falsiness (single
ton-comparison)
termProject.py:843:7: C0121: Comparison 'data.gridSelectP1 == True' should be 'data.gridSelectP1 is True' if checking for the singleton value True, or 'data.gridSelectP1' if testing for truthiness (single
ton-comparison)
termProject.py:846:7: C0121: Comparison 'data.gridSelectP2 == True' should be 'data.gridSelectP2 is True' if checking for the singleton value True, or 'data.gridSelectP2' if testing for truthiness (single
ton-comparison)
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termProject.py:851:7: C0121: Comparison 'data.gridSolved == False' should be 'data.gridSolved is False' if checking for the singleton value False, or 'not data.gridSolved' if testing for falsiness (single
ton-comparison)
termProject.py:853:15: C0121: Comparison 'data.gridHint == True' should be 'data.gridHint is True' if checking for the singleton value True, or 'data.gridHint' if testing for truthiness (singleton-compar
ison)
termProject.py:864:8: C0115: Missing class docstring (missing-class-docstring)
termProject.py:864:8: C0103: Function name "piece" doesn't conform to snake_case naming style (invalid-name)
termProject.py:872:8: C0103: Attribute name "finalPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:872:8: C0103: Attribute name "currPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:864:8: R0205: Class 'piece' inherits from object, can be safely removed from bases in python3 (useless-object-inheritance)
termProject.py:864:8: R0902: Too many instance attributes (14/7) (too-many-instance-attributes)
termProject.py:867:42: C0103: Argument name "finalPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:867:42: C0103: Argument name "currPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:885:4: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:885:4: C0103: Function name "changePos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:885:4: C0103: Method name "changePos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:885:4: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:895:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:899:8: C0103: Function name "checkPuzzleImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:899:27: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:915:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:915:8: C0103: Function name "loadPuzzle1" doesn't conform to snake_case naming style (invalid-name)
termProject.py:915:8: C0103: Function name "loadPuzzle2" doesn't conform to snake_case naming style (invalid-name)
termProject.py:915:8: C0103: Function name "loadPuzzle3" doesn't conform to snake_case naming style (invalid-name)
termProject.py:923:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:928:8: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:928:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:931:4: C0103: Variable name "imgWidth" doesn't conform to snake_case naming style (invalid-name)
termProject.py:931:4: C0103: Variable name "imgHeight" doesn't conform to snake_case naming style (invalid-name)
termProject.py:930:14: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:930:14: C0103: Function name "displayFindings" doesn't conform to snake_case naming style (invalid-name)
termProject.py:930:14: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:944:9: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:944:9: C0103: Function name "giveHint" doesn't conform to snake case naming style (invalid-name)
termProject.py:944:19: W0621: Redefining name 'piece' from outer scope (line 864) (redefined-outer-name)
termProject.py:944:19: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:951:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:951:8: C0103: Function name "drawHintPiece" doesn't conform to snake_case naming style (invalid-name)
termProject.py:954:8: C0103: Comparison 'data.hintPiece is None' should be 'data.hintPiece is not None' (singleton-comparison)
termProject.py:954:8: C0103: Function name "drawHintPiece" doesn't conform to snake_case naming style (invalid-name)
termProject.py:948:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:948:8: C0103: Function name "pieceMouseRelease" doesn't conform to snake_case naming style (invalid-name)
termProject.py:961:7: C0121: Comparison 'data.selectBool == True' should be 'data.selectBool is True' if checking for the singleton value True, or 'data.selectBool' if testing for truthiness (singleton-co
mparison)
termProject.py:962:8: C0103: Variable name "currPiece" doesn't conform to snake_case naming style (invalid-name)
termProject.py:966:23: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:979:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:980:8: C0103: Function name "drawSelPiece" doesn't conform to snake_case naming style (invalid-name)
termProject.py:980:8: C0121: Comparison 'data.selectBool == True' should be 'data.selectBool is True' if checking for the singleton value True, or 'data.selectBool' if testing for truthiness (singleton-co
mparison)
termProject.py:981:8: C0103: Variable name "currPiece" doesn't conform to snake_case naming style (invalid-name)
termProject.py:979:22: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:987:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:987:8: C0103: Function name "puzzleMousePressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:982:8: W0621: Redefining name 'piece' from outer scope (line 864) (redefined-outer-name)
termProject.py:982:8: C0103: Function name "puzzleMousePressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1005:4: C0103: String statement has no effect (pointless-string-statement)
termProject.py:1033:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1034:8: C0103: Function name "makePieces" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1034:8: R0914: Too many local variables (25/15) (too-many-locals)
termProject.py:1038:4: C0103: Variable name "stepHor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1038:13: C0103: Variable name "stepVer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1060:4: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
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termProject.py:1064:12: C0103: Variable name "finalPosition" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1067:12: C0103: Variable name "currPosition" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1071:12: C0103: Variable name "picTemp" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1071:22: C0209: Formatting a regular string which could be an f-string (consider-using-f-string)
termProject.py:1073:12: C0103: Variable name "piccaImport" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1074:12: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1077:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1077:8: C0103: Function name "drawPieces" doesn't conform to snake case naming style (invalid-name)
termProject.py:1077:8: E0102: function already defined line 749 (function-redefined)
termProject.py:1078:8: W0621: Redefining name 'piece' from outer scope (line 864) (redefined-outer-name)
termProject.py:1082:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1083:8: W0621: Redefining name 'piece' from outer scope (line 864) (redefined-outer-name)
termProject.py:1090:4: C0103: Variable name "gametime" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1091:14: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:1091:14: R705: Unused parameter "elif" after "return" before the line "else" from "elif" (no-else-return)
termProject.py:1091:7: C0121: Comparison 'data.pieceSelected == None' should be 'data.pieceSelected is None' (singleton-comparison)
termProject.py:1093:9: C0121: Comparison 'data.selectBool == True' should be 'data.selectBool is True' if checking for the singleton value True, or 'data.selectBool' if testing for truthiness (singleton-comparison)
termProject.py:1098:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1098:8: C0103: Function name "drawHint" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1104:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1104:8: C0103: Function name "drawTimer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1105:4: C0103: Variable name "gametime" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1109:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1109:8: C0103: Function name "puzzleRedrawAll" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1109:8: C0121: Comparison 'data.piecesMade == False' should be 'data.piecesMade is False' if checking for the singleton value False, or 'not data.piecesMade' if testing for falsiness (singleton-comparison)
termProject.py:1109:8: C0121: Comparison 'data.solved == False' should be 'data.solved is False' if checking for the singleton value False, or 'not data.solved' if testing for falsiness (singleton-comparison)
termProject.py:1109:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1109:8: C0103: Function name "solverKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1136:36: C0221: More than one statement on a single line (multiple-statements)
termProject.py:1136:21: W0403: Unused argument 'event' (unused-argument)
termProject.py:1136:28: W0403: Unused argument 'data' (unused-argument)
termProject.py:1138:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1138:8: C0103: Function name "puzzleTimerFired" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1139:7: C0121: Comparison 'data.solved == False' should be 'data.solved is False' if checking for the singleton value False, or 'not data.solved' if testing for falsiness (singleton-comparison)
termProject.py:1146:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1146:8: C0103: Function name "solverMousePressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1161:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1161:8: C0103: Function name "drawSolve" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1168:8: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:1168:8: C0116: Function name "solverKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1171:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1171:8: C0103: Function name "solverTimerFired" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1171:21: W0403: Unused argument 'data' (unused-argument)
termProject.py:1177:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1188:8: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:1188:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1199:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1199:8: C0103: Function name "drawUpLoadTexts" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1210:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1220:8: C0103: Missing function or method docstring (missing-function-docstring)
termProject.py:1220:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1220:9: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1220:9: C0103: Function name "finalMousepressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1238:9: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1238:14: W0403: Unused argument 'canvas' (unused-argument)

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termProject.py:1238:22: W0613: Unused argument 'data' (unused-argument)
termProject.py:1241:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1241:8: C0103: Function name "edgeDetection" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1241:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1241:26: C0103: Unused argument 'data' (unused-argument)
termProject.py:1244:8: E0401: Unable to import 'PIL' (import-error)
termProject.py:1244:8: W0404: Reimport 'Image' (imported line 38) (reimported)
termProject.py:1244:8: W0404: Reimport 'ImageFont' (imported line 38) (reimported)
termProject.py:1244:8: W0404: Reimport 'ImageDraw' (imported line 38) (reimported)
termProject.py:1244:8: C0413: Import 'from PIL import Image, ImageFont, ImageDraw' should be placed at the top of the module (wrong-import-position)
termProject.py:1247:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1247:8: C0103: Function name "finalPuzzleNumbering" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1247:8: R9114: Too many local variables (28/15) (too-many-locals)
termProject.py:1247:10: C0103: Variable name "stepHor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1247:10: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1281:4: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1282:4: C0103: Variable name "dashboardPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1288:12: C0103: Variable name "pieceImp" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1288:12: C0103: Variable name "picName" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1289:22: C0209: Formatting a regular string which could be an f-string (consider-using-f-string)
termProject.py:1293:12: C0103: Variable name "WHITE" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1298:12: C0103: Variable name "picImport" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1298:12: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1297:12: C0612: Unused variable "picImport" (unused-variable)
termProject.py:1297:12: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1308:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1308:8: R9114: Too many local variables (24/15) (too-many-locals)
termProject.py:1317:4: C0103: Variable name "stepHor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1317:13: C0103: Variable name "stepVer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1340:4: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1341:4: C0103: Variable name "dashboardPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1352:12: C0103: Variable name "pieceImp" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1353:12: C0103: Variable name "picName" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1353:22: C0209: Formatting a regular string which could be an f-string (consider-using-f-string)
termProject.py:1356:12: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1356:12: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1357:17: E0402: Undefined variable "colors" (undefined-variable)
termProject.py:1381:21: E0402: Undefined variable "colors" (undefined-variable)
termProject.py:1398:12: W0707: Consider explicitly re-raising using 'except TypeError as exc' and 'raise Exception('Too many colors in the image') from exc' from exc' (raise-missing-from)
termProject.py:1398:12: W0719: Raising too general exception: Exception (broad-exception-raised)
termProject.py:1369:4: W0612: Unused variable "picNum" (unused-variable)
termProject.py:1375:8: W0612: Unused variable "pixels" (unused-variable)
termProject.py:1379:23: W0612: Unused variable "most_present" (unused-variable)
termProject.py:1403:4: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1403:4: C0103: Function name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1424:12: W0707: Consider explicitly re-raising using 'except TypeError as exc' and 'raise Exception('Too many colors in the image') from exc' from exc' (raise-missing-from)
termProject.py:1424:12: W0719: Raising too general exception: Exception (broad-exception-raised)
termProject.py:1409:8: W0612: Unused variable "pixels" (unused-variable)
termProject.py:1413:8: W0612: Unused variable "max_occurrence" (unused-variable)
termProject.py:1413:23: W0612: Unused variable "most_present" (unused-variable)
termProject.py:1427:8: C0413: Import "import copy" should be placed at the top of the module (wrong-import-position)
termProject.py:1429:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1429:8: R9114: Too many local variables (18/15) (too-many-locals)
termProject.py:1429:8: C0103: Function name "compareColors" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1431:8: C0103: Variable name "finalPiecesColors" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1431:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1439:4: C0103: Variable name "numSelected" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1440:4: C0286: Consider iterating with .items() (consider-using-dict-items)
termProject.py:1442:12: C0206: Consider iterating with .items() (consider-using-dict-items)

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termProject.py:12387:22: W0613: Unused argument 'data' (unused-argument)
termProject.py:12414:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:12414:8: C0103: Function name "edgeDetection" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12414:18: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:12441:26: W0613: Unused argument 'data' (unused-argument)
termProject.py:12441:8: E0401: Unable to import 'PIL' (import-error)
termProject.py:12444:8: W0494: Reimport 'Image' (imported line 38) (reimported)
termProject.py:12444:8: W0494: Reimport 'ImageFont' (imported line 38) (reimported)
termProject.py:12474:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:12474:8: C0103: Function name "finalPuzzleNumbering" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12474:8: R0914: Too many local variables (28/15) (too-many-locals)
termProject.py:12475:4: C0103: Variable name "stepHor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12571:13: C0103: Variable name "stepVer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12611:4: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12624:2: C0103: Variable name "dashboardPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12688:12: C0103: Variable name "pieceImg" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12699:12: C0103: Variable name "picName" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12700:12: C0103: Formattting a regular string which could be an f-string (consider-using-f-string)
termProject.py:12701:12: C0103: Variable name "picImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12707:12: C0103: Variable name "picImport" doesn't conform to snake_case naming style (invalid-name)
termProject.py:12708:12: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1277:12: C0103: Variable name "picImage" (invalid-name)
termProject.py:1277:12: W0612: Unused variable 'picImage' (unused-variable)
termProject.py:13088:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:13088:8: C0103: Function name "shufflumbering" doesn't conform to snake_case naming style (invalid-name)
termProject.py:13174:4: C0103: Variable name "stepHor" doesn't conform to snake_case naming style (invalid-name)
termProject.py:13174:4: C0103: Variable name "stepVer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:13484:4: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:13491:14: C0103: Variable name "dashboardPos" doesn't conform to snake_case naming style (invalid-name)
termProject.py:13531:12: C0103: Variable name "pieceImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:13531:12: C0103: Variable name "picName" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1353:22: C0209: Formattting a regular string which could be an f-string (consider-using-f-string)
termProject.py:1356:12: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1367:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1369:4: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1375:17: E0602: Consider explicitly re-raising using 'except TypeError as exc' and 'raise Exception('Too many colors in the image')' from exc' (raise-missing-from)
termProject.py:1381:21: E0602: Undefined variable 'img' (undefined-variable)
termProject.py:1398:12: W0707: Consider explicitly re-raising using 'except TypeError as exc' and 'raise Exception('Too many colors in the image')' from exc' (raise-missing-from)
termProject.py:1398:12: W0719: Raising too general exception: Exceptioin (broad-exception-raised)
termProject.py:1369:4: W0613: Unused variable 'picNum' (unused-variable)
termProject.py:1375:17: W0612: Unused variable 'pixels' (unused-variable)
termProject.py:1381:21: W0612: Unused variable 'img' (undefined-variable)
termProject.py:1379:23: W0612: Unused variable 'most_present' (unused-variable)
termProject.py:1401:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1403:4: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1405:26: C0209: Formattting a regular string which could be an f-string (consider-using-f-string)
termProject.py:1424:12: W0707: Consider explicitly re-raising using 'except TypeError as exc' and 'raise Exception('Too many colors in the image')' from exc' (raise-missing-from)
termProject.py:1424:12: W0719: Raising too general exception: Exceptioin (broad-exception-raised)
termProject.py:1403:4: W0613: Unused variable 'picNum' (unused-variable)
termProject.py:1409:8: W0612: Unused variable 'pixels' (unused-variable)
termProject.py:1410:8: W0612: Unused variable 'max_occurrence' (unused-variable)
termProject.py:1413:23: W0612: Unused variable 'img' (undefined-variable)
termProject.py:1427:8: C0413: Import 'import copy' should be placed at the top of the module (wrong-import-position)
termProject.py:1429:8: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1429:8: C0103: Function name "compareColors" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1430:8: R0914: Too many local variables (18/15) (too-many-locals)
termProject.py:1438:4: C0103: Variable name "finalPiecesColors" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1431:4: C0103: Variable name "shufflesColors" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1439:4: C0103: Variable name "numSelected" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1440:4: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:1442:12: C0206: Consider iterating with .items() (consider-using-dict-items)
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termProject.py:144/84: C0103: Variable name "tempVal" doesn't conform to snake_case naming style (invalid-name)
termProject.py:144/92: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:145/84: C0103: Variable name "firstSieve" doesn't conform to snake_case naming style (invalid-name)
termProject.py:145/94: C0103: Variable name "numSelect" doesn't conform to snake_case naming style (invalid-name)
termProject.py:146/84: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:146/12: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:146/41: C0103: Variable name "tempVal" doesn't conform to snake_case naming style (invalid-name)
termProject.py:147/84: C0103: Consider iterating with .items() (consider-using-dict-items)
termProject.py:148/41: C0103: Variable name "secondSieve" doesn't conform to snake_case naming style (invalid-name)
termProject.py:148/92: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:148/94: C0103: Consider iterating with .items() (consider-using-dict-items)
termProject.py:148/98: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:149/84: C0103: Variable name "tempSieve" doesn't conform to snake_case naming style (invalid-name)
termProject.py:149/92: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:149/98: C0103: Consider iterating with .items() (consider-using-dict-items)
termProject.py:151/84: C0103: Variable name "fourthSieve" doesn't conform to snake_case naming style (invalid-name)
termProject.py:151/92: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:152/84: C0103: Consider iterating with .items() (consider-using-dict-items)
termProject.py:152/92: C0206: Consider iterating with .items() (consider-using-dict-items)
termProject.py:153/84: C0103: Consider iterating with .items() (consider-using-dict-items)
termProject.py:14/29/0: R0912: Too many branches (32/12) (too-many-branches)
termProject.py:14/29/0: R0915: Too many statements (62/58) (too-many-statements)
termProject.py:145/40: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:154/40: C0103: Function name "updateShuffledImageNums" doesn't conform to snake_case naming style (invalid-name)
termProject.py:154/47: E0002: Undefined variable 'data' (undefined-variable)
termProject.py:155/40: C0103: Variable name "stepHgt" doesn't conform to snake_case naming style (invalid-name)
termProject.py:155/41: C0103: Variable name "stepVer" doesn't conform to snake_case naming style (invalid-name)
termProject.py:155/42: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:157/12: C0103: Variable name "WHITE" doesn't conform to snake_case naming style (invalid-name)
termProject.py:157/12: C0103: Variable name "picNum" doesn't conform to snake_case naming style (invalid-name)
termProject.py:158/41: E0042: Undefined variable 'data' (undefined-variable)
termProject.py:158/60: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:158/60: C0103: Function name "edgeDetection" doesn't conform to snake_case naming style (invalid-name)
termProject.py:158/60: E0102: function already defined line 1241 (function-redefined)
termProject.py:156/25: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:156/33: W0613: Unused argument 'data' (unused-argument)
termProject.py:157/01: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:157/01: C0103: Function name "placeNames" doesn't conform to snake_case naming style (invalid-name)
termProject.py:157/17: W0613: Unused argument 'canvas' (unused-argument)
termProject.py:157/25: W0613: Unused argument 'data' (unused-argument)
termProject.py:157/40: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:157/40: C0103: Function name "finalKeyPressed" doesn't conform to snake_case naming style (invalid-name)
termProject.py:157/40: W0613: Unused argument 'event' (unused-argument)
termProject.py:157/70: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:157/70: C0103: Function name "finalFire" doesn't conform to snake_case naming style (invalid-name)
termProject.py:157/70: W0613: Unused argument "data" (unused-argument)
termProject.py:158/01: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:158/01: C0103: Function name "loadShuffled" doesn't conform to snake_case naming style (invalid-name)
termProject.py:158/01: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:158/01: C0103: Variable name "finalImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:159/99: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:159/99: C0103: Function name "displayShuffled" doesn't conform to snake_case naming style (invalid-name)
termProject.py:160/70: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:160/70: C0103: Function name "drawFinalImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:161/63: E0002: Undefined variable 'Imag' (undefined-variable)
termProject.py:161/01: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:161/01: C0103: Function name "createFinalImage" doesn't conform to snake_case naming style (invalid-name)
termProject.py:161/16: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:161/70: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:161/70: C0103: Function name "createSolvedPuzzle" doesn't conform to snake_case naming style (invalid-name)
termProject.py:161/70: W0613: Unused argument 'canvas' (unused-argument)
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termProject.py:1617:31: W0613: Unused argument 'data' (unused-argument)
termProject.py:1620:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1620:0: C0183: Function name "finalRedrawAll" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1623:7: C0121: Comparison 'data.numbering == False' should be 'data.numbering is False' if checking for the singleton value False, or 'not data.numbering' if testing for falsiness (singleton-comparison)
termProject.py:1630:7: C0121: Comparison 'data.shuffNumbering == False' should be 'data.shuffNumbering is False' if checking for the singleton value False, or 'not data.shuffNumbering' if testing for falsiness (singleton-comparison)
termProject.py:1634:7: C0121: Comparison 'data.shuffDisplay == False' should be 'data.shuffDisplay is False' if checking for the singleton value False, or 'not data.shuffDisplay' if testing for falsiness (singleton-comparison)
termProject.py:1643:0: C0116: Missing function or method docstring (missing-function-docstring)
termProject.py:1644:4: C0183: Function name "redrawAllWrapper" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1651:4: C0183: Function name "mousePressedWrapper" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1658:4: C0183: Function name "mouseMotionWrapper" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1663:4: C0183: Function name "mouseReleaseWrapper" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1672:4: C0183: Function name "keyPressedWrapper" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1676:4: C0183: Function name "timerFiredWrapper" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1686:4: C0115: Missing class docstring (missing-class-docstring)
termProject.py:1686:4: C0183: Attribute name "timerDelay" doesn't conform to snake_case naming style (invalid-name)
termProject.py:1682:24: R0285: Class 'Struct' inherits from object, can be safely removed from bases in python3 (useless-object-inheritance)
termProject.py:1682:26: C0321: More than one statement on a single line (multiple-statements)
termProject.py:1684:4: W0281: Attribute 'width' defined outside __init__ (attribute-defined-outside-init)
termProject.py:1685:4: W0281: Attribute 'height' defined outside __init__ (attribute-defined-outside-init)
termProject.py:1686:4: W0281: Attribute 'timerDelay' defined outside __init__ (attribute-defined-outside-init)
termProject.py:1682:4: R0993: Too few public methods (0/2) (too-few-public-methods)
termProject.py:1682:4: C0411: standard import "os" should be placed before third party imports "PIL", "PIL.ImageTk", "PIL.Image" (wrong-import-order)
termProject.py:1684:4: C0411: standard import "time" should be placed before third party imports "PIL", "PIL.ImageTk", "PIL.Image" (wrong-import-order)
termProject.py:372:0: C0411: standard import "tkinter.filedialog" should be placed before third party imports "PIL", "PIL.ImageTk", "PIL.Image" (wrong-import-order)
termProject.py:1427:0: C0411: standard import "copy" should be placed before third party imports "PIL", "PIL.ImageTk", "PIL.Image" (wrong-import-order)
termProject.py:372:0: C0412: Imports from package tkinter are not grouped (ungrouped-imports)
termProject.py:37:0: W0611: Unused import PIL (unused-import)
termProject.py:38:0: W0611: Unused ImageTk imported from PIL (unused-import)
termProject.py:36:0: W0614: Unused import copy (unused-import)
termProject.py:1427:0: W0611: Unused import Tk (unused-import)
termProject.py:1427:0: W0611: Unused import TkVersion, TclVersion, READABLE, WRITABLE, EXCEPTION, EventType, Event, NoDefaultRoot, Variable, StringVar, IntVar, DoubleVar, BooleanVar, mainloop, getint, getdouble, getboolean, Misc, CallWrapper, XView, YView, Wm, Tcl, Pack, Place, Grid, BaseWidget, Widget, Toplevel, Button, Checkbutton, Entry, Frame, Label, Listbox, Menu, Menubutton, Message, Radiobutton, Scale, Scrollbar, Text, OptionMenu, BitmapImage, image_names, image_types, Spinbox, LabelFrame, Panedwindow, NO, FALSE, OFF, YES, TRUE, ON, N, S, W, E, SW, SE, NS, EW, NSEW, CENTER, NONE, X, Y, BOTH, LEFT, TOP, RIGHT, BOTTOM, RAISED, SUNKEN, FLAT, RIDGE, GROOVE, SOLID, HORIZONTAL, VERTICAL, NUMERIC, CHAR, WORD, BASELINE, INSIDE, OUTSIDE, SEL, SEL_FIRST, SEL_LAST, END, INSERT, CURRENT, ANCHOR, NORMAL, DISABLED, ACTIVE, HIDDEN, CASCADE, CHECKBUTTON, COMMAND, RADIobutton, SEPARATOR, SINGLE, BROWSE, MULTIPLE, EXTENDED, DOTBOX, UNDERLINE, PIESLICE, CHORD, ARC, FIRST, LAST, BUTT, PROJECTING, ROUND, BEVEL, MITER, MOVETO, SCROLL, UNITS and PAGES from wildcard import of tkinter (unused-wildcard-import)

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Your code has been rated at 2.09/10 (previous run: 2.09/10, +0.00)
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