

IT314 - Software Engineering

Lab 5 - Static Analysis

ID: 202001172

Name: Vedant Patel

Tool: Pylint

```
4 from time import *
5
6 # BLACK JACK - CASINO
7 # PYTHON CODE BASE
8
9
10 # mas
11 import random
```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** JUPYTER powershell +

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS C:\Users\student\Desktop\202001172_SE_LAB5> pip install pylint
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: pylint in c:\users\student\appdata\roaming\python\python310\site-packages (2.17.0)
Requirement already satisfied: astroid<=2.17.0-dev0,>=2.15.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (2.15.0)
Requirement already satisfied: colorama>=0.4.5 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.4.6)
Requirement already satisfied: tomlikit>=0.10.1 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.11.6)
Requirement already satisfied: mccabe<0.8,>=0.6 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.7.0)
Requirement already satisfied: dill>=0.2 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.3.6)
Requirement already satisfied: toml>=1.1.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (2.0.1)
Requirement already satisfied: platformdirs>=2.2.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (3.1.1)
Requirement already satisfied: isort<6,>=4.2.5 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (5.12.0)
Requirement already satisfied: typing-extensions>=4.0.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0->pylint) (4.5.0)
Requirement already satisfied: wrapt<2,>=1.11 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0->pylint) (1.14.0)
Requirement already satisfied: lazy-object-proxy>=1.4.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0->pylint) (1.9.0)
PS C:\Users\student\Desktop\202001172_SE_LAB5> py -m pylint codefile1.py

Github repository link of code files:

<https://github.com/geekcomputers/Python>

Code file 1

```
# master
# master
# BLACK JACK - CASINO A GAME OF FORTUNE!!!
from time import *

# BLACK JACK - CASINO
# PYTHON CODE BASE

# mas
import random

deck = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10, 10, 10, 11] * 4

random.shuffle(deck)

print(f'{" "*58} \n Welcome to the game Casino - BLACK JACK ! \n{" "*58}\'')
sleep(2)
print("So Finally You Are Here To Accept Your Fate")
sleep(2)
print("I Mean Your Fortune")
sleep(2)
print("Lets Check How Lucky You Are  Wish You All The Best")
sleep(2)
print("Loading---")
sleep(2)

print("Still Loading---")
sleep(2)
print(
    "So You Are Still Here Not Gone I Gave You Chance But No Problem May
    Be You Trust Your Fortune A Lot \n Lets Begin Then"
)
sleep(2)
d_cards = [] # Initialising dealer's cards
p_cards = [] # Initialising player's cards
sleep(2)
while len(d_cards) != 2:
    random.shuffle(deck)
```

```

d_cards.append(deck.pop())
if len(d_cards) == 2:
    print("The cards dealer has are X ", d_cards[1])

# Displaying the Player's cards
while len(p_cards) != 2:
    random.shuffle(deck)
    p_cards.append(deck.pop())
    if len(p_cards) == 2:
        print("The total of player is ", sum(p_cards))
        print("The cards Player has are ", p_cards)

if sum(p_cards) > 21:
    print(f"You are BUSTED !\n    {' '*14}Dealer Wins !!{' '*14}\n")
    exit()

if sum(d_cards) > 21:
    print(f"Dealer is BUSTED !\n    {' '*14} You are the Winner
!!{' '*18}\n")
    exit()

if sum(d_cards) == 21:
    print(f"{' '*24}Dealer is the Winner !!{' '*14}")
    exit()

if sum(d_cards) == 21 and sum(p_cards) == 21:
    print(f"{' '*17}The match is tie !!{' '*25}")
    exit()

# function to show the dealer's choice
def dealer_choice():
    if sum(d_cards) < 17:
        while sum(d_cards) < 17:
            random.shuffle(deck)
            d_cards.append(deck.pop())

    print("Dealer has total " + str(sum(d_cards)) + "with the cards ",
d_cards)

```

```

if sum(p_cards) == sum(d_cards):
    print(f"{' '*15}The match is tie !!{' '*15}")
    exit()

if sum(d_cards) == 21:
    if sum(p_cards) < 21:
        print(f"{' '*23}Dealer is the Winner !!{' '*18}")
    elif sum(p_cards) == 21:
        print(f"{' '*20}There is tie !!{' '*26}")
    else:
        print(f"{' '*23}Dealer is the Winner !!{' '*18}")

elif sum(d_cards) < 21:
    if sum(p_cards) < 21 and sum(p_cards) < sum(d_cards):
        print(f"{' '*23}Dealer is the Winner !!{' '*18}")
    if sum(p_cards) == 21:
        print(f"{' '*22}Player is winner !!{' '*22}")
    if 21 > sum(p_cards) > sum(d_cards):
        print(f"{' '*22}Player is winner !!{' '*22}")

else:
    if sum(p_cards) < 21:
        print(f"{' '*22}Player is winner !!{' '*22}")
    elif sum(p_cards) == 21:
        print(f"{' '*22}Player is winner !!{' '*22}")
    else:
        print(f"{' '*23}Dealer is the Winner !!{' '*18}")

while sum(p_cards) < 21:

    # to continue the game again and again !!
    k = input("Want to hit or stay?\n Press 1 for hit and 0 for stay ")
    if k == 1:
        random.shuffle(deck)
        p_cards.append(deck.pop())
        print("You have a total of " + str(sum(p_cards)) + " with the
cards ", p_cards)
        if sum(p_cards) > 21:
            print(f'{" "*13}You are BUSTED !!{" "*13}\n Dealer Wins !!')

```

```

        if sum(p_cards) == 21:
            print(f'{"*" * 19}You are the Winner !!{"*" * 29}')

    else:
        dealer_choice()
        break

```

Static analysis

```

11 import random

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER

(4.5.0)
Requirement already satisfied: wrapt<2,>=1.11 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0) (1.12.1)
Requirement already satisfied: lazy-object-proxy>=1.4.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0) (1.9.0)
PS C:\Users\student\Desktop\202001172_SE_LAB5> py -m pylint codefile1.py
***** Module codefile1
codefile1.py:31:0: C0301: Line too long (124/100) (line-too-long)
codefile1.py:121:0: C0304: Final newline missing (missing-final-newline)
codefile1.py:1:0: C0114: Missing module docstring (missing-module-docstring)
codefile1.py:4:0: W0401: Wildcard import time (wildcard-import)
codefile1.py:53:4: R1722: Consider using 'sys.exit' instead (consider-using-sys-exit)
codefile1.py:57:4: R1722: Consider using 'sys.exit' instead (consider-using-sys-exit)
codefile1.py:61:4: R1722: Consider using 'sys.exit' instead (consider-using-sys-exit)
codefile1.py:65:4: R1722: Consider using 'sys.exit' instead (consider-using-sys-exit)
codefile1.py:69:0: C0116: Missing function or method docstring (missing-function-docstring)
codefile1.py:79:8: R1722: Consider using 'sys.exit' instead (consider-using-sys-exit)
codefile1.py:69:0: R0912: Too many branches (14/12) (too-many-branches)
codefile1.py:4:0: W0614: Unused import(s) altzone, asctime, ctime, daylight, get_clock_info, gmtime, localtime, mktime, monotonic, monotonic_ns, process_time, process_time_ns, strftime, strptime, struct_time, thread_time, thread_time_ns, time, time_ns, timezone and tzname from wildcard import (unused-wildcard-import)

Your code has been rated at 8.55/10
PS C:\Users\student\Desktop\202001172_SE_LAB5>

Code file 2

```
class Node:
    def __init__(self, data):
        self.data = data
        self.next = None

class Linked_List:
    def __init__(self):
        self.head = None

    def Insert_At_Beginning(self, new_data):
        new_node = Node(new_data)
        if self.head is None:
            self.head = new_node
            return
        new_node.next = self.head
        self.head = new_node

    def Add_two_no(self, First, Second):
        prev = None
        temp = None
        carry = 0
        while First is not None or Second is not None:
            first_data = 0 if First is None else First.data
            second_data = 0 if Second is None else Second.data
            Sum = carry + first_data + second_data
            carry = 1 if Sum >= 10 else 0
            Sum = Sum if Sum < 10 else Sum % 10
            temp = Node(Sum)
            if self.head is None:
                self.head = temp
            else:
                prev.next = temp
            prev = temp
            if First is not None:
                First = First.next
            if Second is not None:
                Second = Second.next
        if carry > 0:
```

```

        temp.next = Node(carry)

    def Display(self):
        temp = self.head
        while temp:
            print(temp.data, "->", end=" ")
            temp = temp.next
        print("None")

if __name__ == "__main__":
    First = Linked_List()
    Second = Linked_List()
    First.Insert_At_Beginning(6)
    First.Insert_At_Beginning(4)
    First.Insert_At_Beginning(9)

    Second.Insert_At_Beginning(2)
    Second.Insert_At_Beginning(2)

    print("First Linked List: ")
    First.Display()
    print("Second Linked List: ")
    Second.Display()

    Result = Linked_List()
    Result.Add_two_no(First.head, Second.head)
    print("Final Result: ")
    Result.Display()

```

Static analysis

```
unused-wildcard-import)

-----
Your code has been rated at 8.55/10

PS C:\Users\student\Desktop\202001172_SE_LAB5> py -m pylint codefile2.py
***** Module codefile2
codefile2.py:68:0: C0304: Final newline missing (missing-final-newline)
codefile2.py:1:0: C0114: Missing module docstring (missing-module-docstring)
codefile2.py:1:0: C0115: Missing class docstring (missing-class-docstring)
codefile2.py:1:0: R0903: Too few public methods (0/2) (too-few-public-methods)
codefile2.py:7:0: C0115: Missing class docstring (missing-class-docstring)
codefile2.py:7:0: C0103: Class name "Linked_list" doesn't conform to PascalCase naming style (invalid-name)
codefile2.py:11:4: C0116: Missing function or method docstring (missing-function-docstring)
codefile2.py:11:4: C0103: Method name "Insert_At_Beginning" doesn't conform to snake_case naming style (invalid-name)
codefile2.py:19:4: C0116: Missing function or method docstring (missing-function-docstring)
codefile2.py:19:4: C0103: Method name "Add_two_no" doesn't conform to snake_case naming style (invalid-name)
codefile2.py:19:25: C0103: Argument name "First" doesn't conform to snake_case naming style (invalid-name)
codefile2.py:19:32: C0103: Argument name "Second" doesn't conform to snake_case naming style (invalid-name)
codefile2.py:19:25: W0621: Redefining name 'First' from outer scope (line 51) (redefined-outer-name)
codefile2.py:19:32: Redefining name 'Second' from outer scope (line 52) (redefined-outer-name)
codefile2.py:26:12: C0103: Variable name "Sum" doesn't conform to snake_case naming style (invalid-name)
codefile2.py:28:12: C0103: Variable name "Sum" doesn't conform to snake_case naming style (invalid-name)
codefile2.py:42:4: C0116: Missing function or method docstring (missing-function-docstring)
codefile2.py:42:4: C0103: Method name "Display" doesn't conform to snake_case naming style (invalid-name)

-----
Your code has been rated at 6.84/10

PS C:\Users\student\Desktop\202001172_SE_LAB5> █
```

Code file 3

```
def base_check(xnumber, xbase):
    for char in xnumber[len(xnumber) - 1]:
        if int(char) >= int(xbase):
            return False
    return True

def convert_from_10(xnumber, xbase, arr, ybase):
    if int(xbase) == 2 or int(xbase) == 4 or int(xbase) == 6 or int(xbase)
== 8:

        if xnumber == 0:
            return arr
        else:
            quotient = int(xnumber) // int(xbase)
            remainder = int(xnumber) % int(xbase)
            arr.append(remainder)
            dividend = quotient
            convert_from_10(dividend, xbase, arr, base)
    elif int(xbase) == 16:
        if int(xnumber) == 0:
```



```

        return arr
    else:
        quotient = int(xnumber) // int(xbase)
        remainder = int(xnumber) % int(xbase)
        if remainder > 9:
            if remainder == 10:
                remainder = "A"
            if remainder == 11:
                remainder = "B"
            if remainder == 12:
                remainder = "C"
            if remainder == 13:
                remainder = "D"
            if remainder == 14:
                remainder = "E"
            if remainder == 15:
                remainder = "F"
        arr.append(remainder)
        dividend = quotient
        convert_from_10(dividend, xbase, arr, ybase)

```

```

def convert_to_10(xnumber, xbase, arr, ybase):
    if int(xbase) == 10:
        for char in xnumber:
            arr.append(char)
        flipped = arr[::-1]
        ans = 0
        j = 0

        for i in flipped:
            ans = ans + (int(i) * (int(ybase) ** j))
            j = j + 1
        return ans

```

```

arrayfrom = []
arrayto = []
is_base_possible = False
number = input("Enter the number you would like to convert: ")

```

```

while not is_base_possible:
    base = input("What is the base of this number? ")
    is_base_possible = base_check(number, base)
    if not is_base_possible:
        print(f"The number {number} is not a base {base} number")
        base = input
    else:
        break

dBase = input("What is the base you would like to convert to? ")
if int(base) == 10:
    convert_from_10(number, dBase, arrayfrom, base)
    answer = arrayfrom[::-1] # reverses the array
    print(f"In base {dBase} this number is: ")
    print(*answer, sep="")
elif int(dBase) == 10:
    answer = convert_to_10(number, dBase, arrayto, base)
    print(f"In base {dBase} this number is: {answer} ")
else:
    number = convert_to_10(number, 10, arrayto, base)
    convert_from_10(number, dBase, arrayfrom, base)
    answer = arrayfrom[::-1]
    print(f"In base {dBase} this number is: ")
    print(*answer, sep="")

```

Static analysis

```

codefile2.py:42:4: C0103: Method name "display" doesn't conform to snake_case naming style (invalid-name)
-----
Your code has been rated at 6.84/10

PS C:\Users\student\Desktop\202001172_SE_LAB5> py -m pylint codefile3.py
***** Module codefile3
codefile3.py:84:0: C0304: Final newline missing (missing-final-newline)
codefile3.py:1:0: C0114: Missing module docstring (missing-module-docstring)
codefile3.py:1:0: C0116: Missing function or method docstring (missing-function-docstring)
codefile3.py:8:0: C0116: Missing function or method docstring (missing-function-docstring)
codefile3.py:11:8: R1705: Unnecessary "else" after "return", remove the "else" and de-indent the code inside it (no-else-return)
codefile3.py:20:8: R1705: Unnecessary "else" after "return", remove the "else" and de-indent the code inside it (no-else-return)
codefile3.py:8:0: R0912: Too many branches (13/12) (too-many-branches)
codefile3.py:8:0: R1710: Either all return statements in a function should return an expression, or none of them should. (inconsistent-return-statements)
codefile3.py:43:0: C0116: Missing function or method docstring (missing-function-docstring)
codefile3.py:43:0: R1710: Either all return statements in a function should return an expression, or none of them should. (inconsistent-return-statements)
codefile3.py:59:0: C0103: Constant name "is_base_possible" doesn't conform to UPPER_CASE naming style (invalid-name)
codefile3.py:64:4: C0103: Constant name "is_base_possible" doesn't conform to UPPER_CASE naming style (invalid-name)
-----
Your code has been rated at 8.31/10

```

Code file 4

```
# It returns location of x in given array arr
# if present, else returns -1
def binary_search(arr, l, r, x):
    # Base case: if left index is greater than right index, element is not
    # present
    if l > r:
        return -1

    # Calculate the mid index
    mid = (l + r) // 2

    # If element is present at the middle itself
    if arr[mid] == x:
        return mid

    # If element is smaller than mid, then it can only be present in left
    # subarray
    elif arr[mid] > x:
        return binary_search(arr, l, mid - 1, x)

    # Else the element can only be present in right subarray
    else:
        return binary_search(arr, mid + 1, r, x)

# Main Function
if __name__ == "__main__":
    # User input array
    arr = [int(x) for x in input("Enter the array with elements separated
    by commas: ").split(",")]

    # User input element to search for
    x = int(input("Enter the element you want to search for: "))

    # Function call
    result = binary_search(arr, 0, len(arr) - 1, x)

    # printing the output
    if result != -1:
```

```

        print("Element is present at index {}".format(result))
    else:
        print("Element is not present in array")

```

Static analysis

Your code has been rated at 8.31/10

```

PS C:\Users\student\Desktop\202001172_SE_LAB5> py -m pylint codefile4.py
***** Module codefile4
codefile4.py:39:0: C0304: Final newline missing (missing-final-newline)
codefile4.py:1:0: C0114: Missing module docstring (missing-module-docstring)
codefile4.py:3:0: C0116: Missing function or method docstring (missing-function-docstring)
codefile4.py:3:23: C0103: Argument name "l" doesn't conform to snake_case naming style (invalid-name)
codefile4.py:3:26: C0103: Argument name "r" doesn't conform to snake_case naming style (invalid-name)
codefile4.py:3:29: C0103: Argument name "x" doesn't conform to snake_case naming style (invalid-name)
codefile4.py:3:18: W0621: Redefining name 'arr' from outer scope (line 27) (redefined-outer-name)
codefile4.py:3:29: W0621: Redefining name 'x' from outer scope (line 30) (redefined-outer-name)
codefile4.py:12:4: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
codefile4.py:37:14: C0209: Formatting a regular string which could be a f-string (consider-using-f-string)

```

Code file 5

```

# Python3 program merge two sorted linked
# in third linked list using recursive.

# Node class
class Node:
    def __init__(self, data):
        self.data = data
        self.next = None

# Constructor to initialize the node object
class LinkedList:

    # Function to initialize head
    def __init__(self):
        self.head = None

```

```

# Method to print linked list
def printList(self):
    temp = self.head

    while temp:
        print(temp.data, end="->")
        temp = temp.next

# Function to add of node at the end.
def append(self, new_data):
    new_node = Node(new_data)

    if self.head is None:
        self.head = new_node
        return
    last = self.head

    while last.next:
        last = last.next
    last.next = new_node

# Function to merge two sorted linked list.
def mergeLists(head1, head2):

    # create a temp node NULL
    temp = None

    # List1 is empty then return List2
    if head1 is None:
        return head2

    # if List2 is empty then return List1
    if head2 is None:
        return head1

    # If List1's data is smaller or
    # equal to List2's data
    if head1.data <= head2.data:

```

```

        # assign temp to List1's data
        temp = head1

        # Again check List1's data is smaller or equal List2's
        # data and call mergeLists function.
        temp.next = mergeLists(head1.next, head2)

    else:

        # If List2's data is greater than or equal List1's
        # data assign temp to head2
        temp = head2

        # Again check List2's data is greater or equal List's
        # data and call mergeLists function.
        temp.next = mergeLists(head1, head2.next)

    # return the temp list.
    return temp

# Driver Function
if __name__ == "__main__":

    # Create linked list :
    # 10->20->30->40->50
    list1 = LinkedList()
    list1.append(10)
    list1.append(20)
    list1.append(30)
    list1.append(40)
    list1.append(50)

    # Create linked list 2 :
    # 5->15->18->35->60
    list2 = LinkedList()
    list2.append(5)
    list2.append(15)
    list2.append(18)
    list2.append(35)

```

```

list2.append(60)

# Create linked list 3
list3 = LinkedList()

# Merging linked list 1 and linked list 2
# in linked list 3
list3.head = mergeLists(list1.head, list2.head)

print(" Merged Linked List is : ", end="")
list3.printList()

```

Static analysis

```

PS C:\Users\student\Desktop\202001172_SE_LAB5> py -m pylint codefile5.py
***** Module codefile5
codefile5.py:107:0: C0304: Final newline missing (missing-final-newline)
codefile5.py:1:0: C0114: Missing module docstring (missing-module-docstring)
codefile5.py:5:0: C0115: Missing class docstring (missing-class-docstring)
codefile5.py:5:0: R0903: Too few public methods (0/2) (too-few-public-methods)
codefile5.py:12:0: C0115: Missing class docstring (missing-class-docstring)
codefile5.py:19:4: C0116: Missing function or method docstring (missing-function-docstring)
codefile5.py:19:4: C0103: Method name "printList" doesn't conform to snake_case naming style (invalid-name)
codefile5.py:27:4: C0116: Missing function or method docstring (missing-function-docstring)
codefile5.py:41:0: C0116: Missing function or method docstring (missing-function-docstring)
codefile5.py:41:0: C0103: Function name "mergeLists" doesn't conform to snake_case naming style (invalid-name)

-----
Your code has been rated at 8.00/10

PS C:\Users\student\Desktop\202001172_SE_LAB5> █

```

Error Analysis

S.No	Message Object	Expansion	Explanation
1.	C	Convention	It is displayed when the program is not following the standard rules.
2.	R	Refactor	It is displayed for bad code smell
3.	W	Warning	It is displayed for python specific problems
4.	E	Error	It is displayed when that particular line execution results some error
5.	F	Fatal	It is displayed when pylint has no access to further process that line.

