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Branch - CBA Batch - 41
FP Practical 3

Institute of Computer Technology
B. Tech Computer Science and Engineering

Sub: (2CSE403) FUNCTIONAL PROGRAMMING

Practical 3

1. Four friends are playing cards. One person has to assume whether the opponent is giving correct judgment or not? The scenario is to simulate a person to pick a card from a deck of 52 cards. The opponent should be able to recognize the rank and suit of the card. i.e. (Rank can be: Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, king) and suit: Clubs, Diamonds, Heart, Spades).

Here is a sample run of the program:

The card you picked is the Jack of Hearts.

Code :

```
import random

suit = ("Clubs", "Diamonds", "Heart", "Spades")

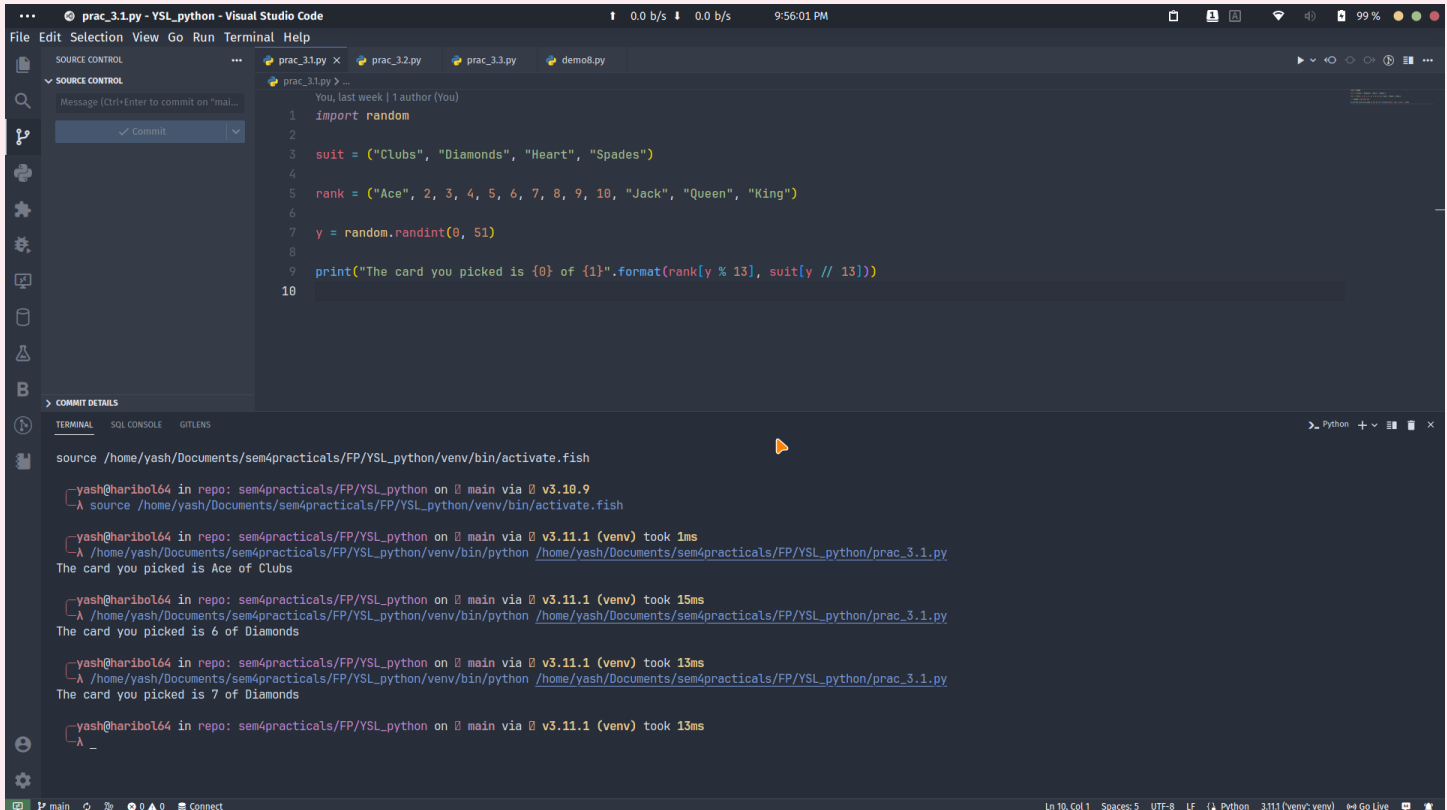
rank = ("Ace", 2, 3, 4, 5, 6, 7, 8, 9, 10, "Jack", "Queen", "King")

y = random.randint(0, 51)

print("The card you picked is {0} of {1}".format(rank[y % 13], suit[y // 13]))
```

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Output :



The screenshot shows the Visual Studio Code interface. The editor displays a Python script named `prac_3.1.py` with the following code:

```
1 import random
2
3 suit = ("Clubs", "Diamonds", "Heart", "Spades")
4
5 rank = ("Ace", 2, 3, 4, 5, 6, 7, 8, 9, 10, "Jack", "Queen", "King")
6
7 y = random.randint(0, 51)
8
9 print("The card you picked is {0} of {1}".format(rank[y % 13], suit[y // 13]))
10
```

The terminal at the bottom shows the execution of the script. It starts with the command `source /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/activate.fish`. Then, it shows the execution of `python /home/yash/Documents/sem4practicals/FP/YSL_python/prac_3.1.py` three times, each time displaying a different card picked by the program:

```
yash@haribol64 in repo: sem4practicals/FP/YSL_python on 0 main via 0 v3.10.9
-A source /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/activate.fish

yash@haribol64 in repo: sem4practicals/FP/YSL_python on 0 main via 0 v3.11.1 (venv) took 1ms
-A /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/python /home/yash/Documents/sem4practicals/FP/YSL_python/prac_3.1.py
The card you picked is Ace of Clubs

yash@haribol64 in repo: sem4practicals/FP/YSL_python on 0 main via 0 v3.11.1 (venv) took 15ms
-A /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/python /home/yash/Documents/sem4practicals/FP/YSL_python/prac_3.1.py
The card you picked is 6 of Diamonds

yash@haribol64 in repo: sem4practicals/FP/YSL_python on 0 main via 0 v3.11.1 (venv) took 13ms
-A /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/python /home/yash/Documents/sem4practicals/FP/YSL_python/prac_3.1.py
The card you picked is 7 of Diamonds

yash@haribol64 in repo: sem4practicals/FP/YSL_python on 0 main via 0 v3.11.1 (venv) took 13ms
-A _
```

2. An astrologer is interested to do analysis for the calculations w.r.t zodiac signs. The zodiac sign depends upon the month, day and date on which any person is born. To make his work easy, help the astrologer to display first days of each month by considering his requirements. He has to only provide the year and first day of the year.

Sample: if the user entered year 2021, and 5 for Friday, January 1, 2021, the program should display the following output:

January 1, 2021 is Friday

...

December 1, 2021 is Wednesday.

Code :

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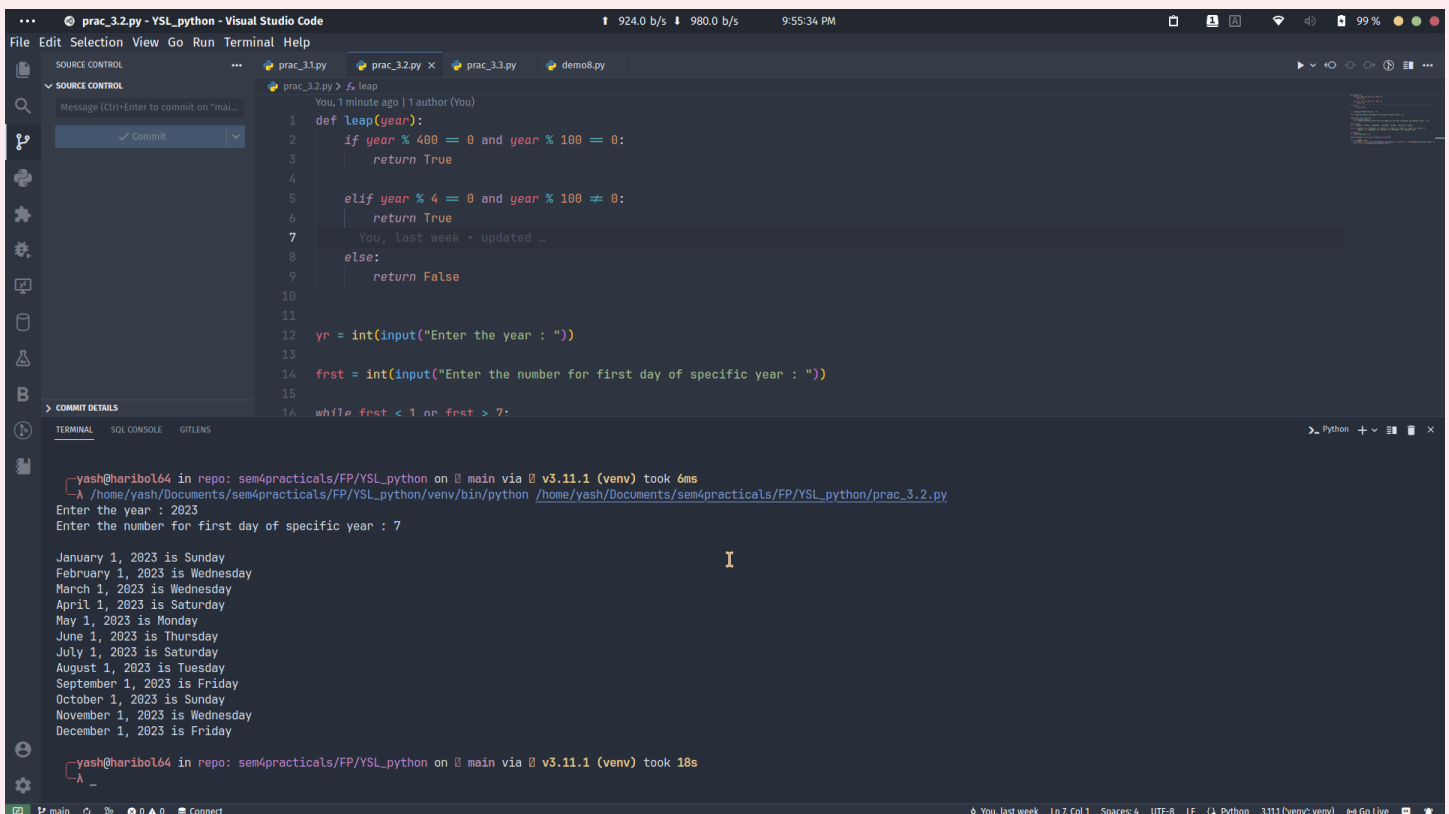
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```
def leap(year):  
    if year % 400 == 0 and year % 100 == 0:  
        return True  
    elif year % 4 == 0 and year % 100 != 0:  
        return True  
    else:  
        return False  
  
yr = int(input("Enter the year : "))  
  
frst = int(input("Enter the number for first day of specific year : "))  
  
while frst < 1 or frst > 7:  
    print("Invalid Input!")  
    frst = int(input("Please enter the valid number for first day of  
specific year between 1 and 7 : "))  
  
frst = frst-1  
  
dys = ("Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday",  
"Sunday")  
  
mnts = {"January": 31, "February": 28, "March": 31, "April": 30, "May":  
31, "June": 30, "July": 31,  
        "August": 31, "September": 30, "October": 31, "November": 30,  
"December": 31}
```

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```
if leap(yr):  
    mnths["February"] = 29  
  
print("\nJanuary 1, {0} is {1}".format(yr, dys[frst]))  
  
for i in range(1, 12):  
    print("{0} 1, {1} is {2}".format(list(mnths.keys())[i], yr, dys[(frst +  
mnths[list(mnths.keys())[i-1]]) % 7]))  
    frst = (frst + mnths[list(mnths.keys())[i-1]]) % 7
```

Output :



```
...  prac_3.2.py - YSL_python - Visual Studio Code  924.0 b/s  980.0 b/s  9:55:34 PM  99 %  
File Edit Selection View Go Run Terminal Help  
SOURCE CONTROL  prac_3.1.py  prac_3.2.py X  prac_3.3.py  demo08.py  
You, 1 minute ago [1 author (You)]  
1  def leap(year):  
2      if year % 400 == 0 and year % 100 != 0:  
3          return True  
4  
5      elif year % 4 == 0 and year % 100 != 0:  
6          return True  
7      You, last week • updated ...  
8      else:  
9          return False  
10  
11  
12  yr = int(input("Enter the year : "))  
13  
14  frst = int(input("Enter the number for first day of specific year : "))  
15  
16  while frst < 1 or frst > 7:  
  
yash@haribol64 in repo: sem4practicals/FP/YSL_python on  main via  v3.11.1 (venv) took 6ms  
- /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/python /home/yash/Documents/sem4practicals/FP/YSL_python/prac_3.2.py  
Enter the year : 2023  
Enter the number for first day of specific year : 7  
  
January 1, 2023 is Sunday  
February 1, 2023 is Wednesday  
March 1, 2023 is Wednesday  
April 1, 2023 is Saturday  
May 1, 2023 is Monday  
June 1, 2023 is Thursday  
July 1, 2023 is Saturday  
August 1, 2023 is Tuesday  
September 1, 2023 is Friday  
October 1, 2023 is Sunday  
November 1, 2023 is Wednesday  
December 1, 2023 is Friday  
  
yash@haribol64 in repo: sem4practicals/FP/YSL_python on  main via  v3.11.1 (venv) took 18s  
- _  
main  You, last week  Ln 7, Col 1  Spaces: 4  UTF-8  LF  Python  3.11.1 (venv: venv)  Go Live
```

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3. A teaching assistance is asked to prepare program to generate a quiz corresponding to faculties requirement. The program should generate questions depending on faculties requirement should report correct answers after a student answers all of them. Also, the time spent on the test by each student should be known.

Code :

```
import time

q1 = ["What is Linux native",
      "Which is most used basic shell in Linux distros",
      "Which linux command is used to manage processes",
      "Which is the most popular community driven linux distribution",
      "Which package manager Arch based distributions use"]
q2 = ["Which is the most popular Linux desktop environment",
      "Which display protocol is newer and tends to replace X server",
      "RHEL is derived from which linux distribution",
      "Fedora uses a package manager which is slower compared to others.
Which is it",
      "Which linux command is used to do an activity as root"]

a1 = ["kernel", "bash", "top", "arch", "pacman"]
a2 = ["gnome", "wayland", "fedora", "dnf", "sudo"]

def linuxquiz1(stdnt_name: str):
    ans = ["", "", "", "", ""]
```

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```
mrks = 0

print("\n\tLinux Quiz 1!")

begin = time.time()

for i in range(0, len(q1)):
    print(f"\n{q1[i]}?")
    ans[i] = input("Answer : ").lower()
    if str(ans[i]).__contains__(str(a1[i])):
        mrks += 1
end = time.time()

print(f"\nIn Linux Quiz 1, the score of the student {stdnt_name} is :
{mrks} marks\nThe records are : ")

for i in range(0, len(q1)):
    print(f"\n\t{q1[i]}?\n\tAnswer given : {ans[i]}\n\tCorrect answer :
{a1[i]}")

print("\nTime taken for quiz : {:.4f} minutes".format((end -
begin)/60))

def linuxquiz2(stdnt_name: str):
    ans = ["", "", "", "", ""]
    mrks = 0
    print("\n\tLinux Quiz 2!")
```

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```
begin = time.time()

for i in range(0, len(q2)):
    print(f"\n{q2[i]}?")
    ans[i] = input("Answer : ").lower()
    if str(ans[i]).__contains__(str(a2[i])):
        mrks += 1
end = time.time()

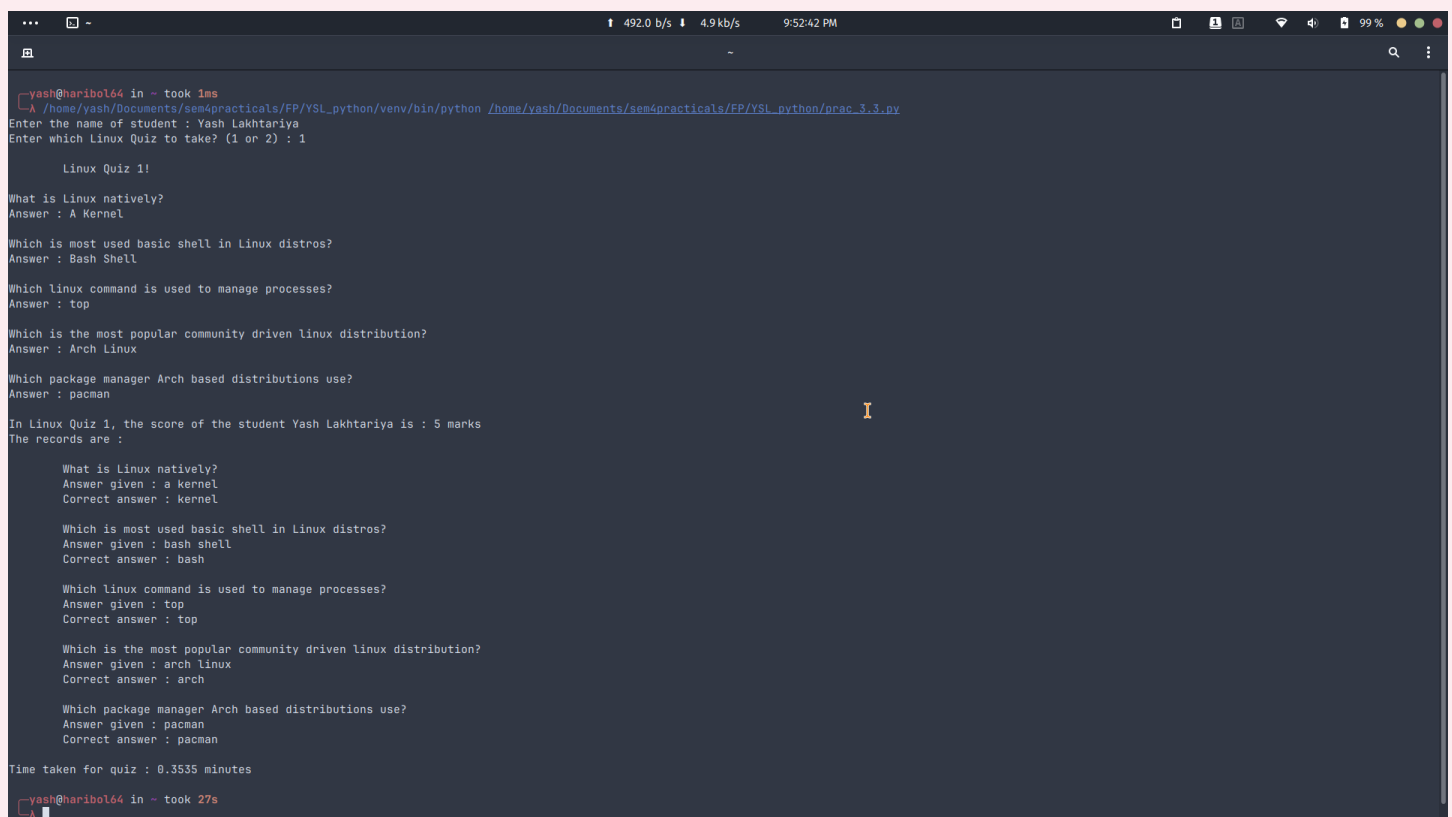
print(f"\nIn Linux Quiz 2, the score of the student {stdnt_name} is :
{mrks} marks\nThe records are : ")
for i in range(0, len(q2)):
    print(f"\n\t{q2[i]}?\n\tAnswer given : {ans[i]}\n\tCorrect answer :
{a2[i]}")
    print("\nTime taken for quiz : {:.4f} minutes".format((end -
begin)/60))

stdnt_name = input("Enter the name of student : ")
choice = input("Enter which Linux Quiz to take? (1 or 2) : ")
while choice != "1" and choice != "2":
    print("Invalid Input!")
    choice = int(input("Enter which Linux Quiz to take? (1 or 2) : "))
```

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```
if choice == "1":  
    linuxquiz1(stdnt_name)  
elif choice == "2":  
    linuxquiz2(stdnt_name)
```

Output :



```
... 492.0 b/s 4.9 kb/s 9:52:42 PM  
yash@haribol64 in ~ took 1ms  
-A /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/python /home/yash/Documents/sem4practicals/FP/YSL_python/prac_3.3.py  
Enter the name of student : Yash Lakhtariya  
Enter which Linux Quiz to take? (1 or 2) : 1  
  
Linux Quiz 1!  
  
What is Linux natively?  
Answer : A Kernel  
  
Which is most used basic shell in Linux distros?  
Answer : Bash Shell  
  
Which Linux command is used to manage processes?  
Answer : top  
  
Which is the most popular community driven linux distribution?  
Answer : Arch Linux  
  
Which package manager Arch based distributions use?  
Answer : pacman  
  
In Linux Quiz 1, the score of the student Yash Lakhtariya is : 5 marks  
The records are :  
  
What is Linux natively?  
Answer given : a kernel  
Correct answer : kernel  
  
Which is most used basic shell in Linux distros?  
Answer given : bash shell  
Correct answer : bash  
  
Which Linux command is used to manage processes?  
Answer given : top  
Correct answer : top  
  
Which is the most popular community driven linux distribution?  
Answer given : arch linux  
Correct answer : arch  
  
Which package manager Arch based distributions use?  
Answer given : pacman  
Correct answer : pacman  
  
Time taken for quiz : 0.3535 minutes  
yash@haribol64 in ~ took 27s  
-A
```


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```
... 4.4 kb/s 7.9 kb/s 9:53:31 PM
-yash@haribol64 in ~ took 27s
_A /home/yash/Documents/sem4practicals/FP/YSL_python/venv/bin/python /home/yash/Documents/sem4practicals/FP/YSL_python/prac_3.3.py
Enter the name of student : Lakhtariya Yash
Enter which Linux Quiz to take? (1 or 2) : 2

Linux Quiz 2!

Which is the most popular Linux desktop environment?
Answer : GNOME DE

Which display protocol is newer and tends to replace X server?
Answer : Wayland server

RHEL is derived from which linux distribution?
Answer : Fedora

Fedora uses a package manager which is slower compared to others. Which is it?
Answer : DNF package manager

Which linux command is used to do an activity as root?
Answer : sudo

In Linux Quiz 2, the score of the student Lakhtariya Yash is : 5 marks
The records are :

Which is the most popular Linux desktop environment?
Answer given : gnome de
Correct answer : gnome

Which display protocol is newer and tends to replace X server?
Answer given : wayland server
Correct answer : wayland

RHEL is derived from which linux distribution?
Answer given : fedora
Correct answer : fedora

Fedora uses a package manager which is slower compared to others. Which is it?
Answer given : dnf package manager
Correct answer : dnf

Which linux command is used to do an activity as root?
Answer given : sudo
Correct answer : sudo

Time taken for quiz : 0.4244 minutes

-yash@haribol64 in ~ took 33s
_A
```