جامعة بغداد _ كلية العلوم للبنات
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قسم علوم الحاسوب
المرحلة: الثالثة

Human-computer interaction

Lecture2: Simple Games

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1-Rock, Paper and Scissors Game with Python

```
import random
choices = ["Rock", "Paper", "Scissors"]
computer = random.choice(choices)
player = False
cpu_score = 0
player_score = 0
while True:
    player = input("Rock, Paper or  Scissors?").capitalize()
    ## Conditions of Rock,Paper and Scissors
    if player == computer:
        print("Tie!")
    elif player == "Rock":
        if computer == "Paper":
            print("You lose!", computer, "covers", player)
            cpu_score+=1
        else:
            print("You win!", player, "smashes", computer)
            player_score+=1
    elif player == "Paper":
        if computer == "Scissors":
            print("You lose!", computer, "cut", player)
            cpu_score+=1
        else:
            print("You win!", player, "covers", computer)
            player_score+=1
    elif player == "Scissors":
        if computer == "Rock":
            print("You lose...", computer, "smashes", player)
            cpu_score+=1
```

```
        else:
            print("You win!", player, "cut", computer)
            player_score+=1
    elif player=='End':
        print("Final Scores:")
        print(f"CPU:{cpu_score}")
        print(f"Player:{player_score}")
        break
    computer = random.choice(choices)
```

B- Rock, Paper and Scissors Game with interface:

The tkinter package (“Tk interface”) is the standard Python interface to the Tcl/Tk GUI toolkit. Both Tk and tkinter are available on most Unix platforms, including macOS, as well as on Windows systems.

Running python -m tkinter from the command line should open a window demonstrating a simple Tk interface, letting you know that tkinter is properly installed on your system, and also showing what version of Tcl/Tk is installed, so you can read the Tcl/Tk documentation specific to that version.

Tk

Tk is a Tcl package implemented in C that adds custom commands to create and manipulate GUI widgets. Each Tk object embeds its own Tcl interpreter instance with Tk loaded into it. Tk’s widgets are very customizable, though at the cost of a dated appearance. Tk uses Tcl’s event queue to generate and process GUI events.

Tkinter Modules

Support for Tkinter is spread across several modules. Most applications will need the main tkinter module, as well as the tkinter.ttk module, which provides the modern themed widget set and API:

from tkinter import *

from tkinter import ttk

https://docs.python.org/3/library/tkinter.html

```
#RPS GUI
from tkinter import *
import random
import tkinter
user = int
computer = int
win = 0
lose = 0
def rps(win, lose, user):
    computer = random.randrange(1,4)
    if user == computer:
        var.set("It's a draw. \n No Points")
    elif user == 1 and computer == 3:
        var.set("You chose Rock, I chose Scissors. \nYou win")
        wins.set(wins.get() + 1)

    elif user == 1 and computer == 2:
        var.set("You chose Rock, I chose Paper. \nYou lose")
        lose += 1
        wins.set(wins.get() - 1)
    elif user == 2 and computer == 1:
        var.set("You chose Paper, I chose Rock. \nYou win")
        wins.set(wins.get() + 1)
        wins.set(wins.get() - 1)
    elif user == 2 and computer == 3:
        var.set("You chose Paper, I chose Scissors. \nYou lose")
        lose += 1
        wins.set(wins.get() - 1)
```

```
elif user == 3 and computer == 1:
    var.set("You chose Scissors, I chose Rock. \nYou lose")
    lose += 1
    wins.set(wins.get() - 1)
elif user == 3 and computer == 2:
    var.set("You chose Scissors, I chose Paper. \nYou win")
    wins.set(wins.get() + 1)

elif user == 4 and computer == 3:
    var.set("You chose Spock, I chose Scissors. \nYou win")
    wins.set(wins.get() + 1)

elif user == 4 and computer == 1:
    var.set("You chose Spock, I chose Rock. \nYou win")
    wins.set(wins.get() + 1)

elif user == 4 and computer == 5:
    var.set("You chose Spock, I chose Lizard. \nYou lose")
    lose +=1
    wins.set(wins.get() - 1)
elif user == 4 and computer == 2:
    var.set("You chose Spock, I chose Paper. \nYou lose")
    lose +=1
    wins.set(wins.get() - 1)
elif user == 5 and computer == 1:
    var.set("You chose Lizard, I chose Rock. \nYou lose")
    lose +=1
    wins.set(wins.get() - 1)
```

```
elif user == 5 and computer == 2:
    var.set("You chose Lizard, I chose Paper. \nYou win")
    wins.set(wins.get() + 1)

elif user == 5 and computer == 3:
    var.set("You chose Lizard, I chose Scissors. \nYou lose")
    lose +=1
    wins.set(wins.get() - 1)
elif user == 5 and computer == 4:
    var.set("You chose Lizard, I chose Spock. \nYou win")
    wins.set(wins.get() + 1)

elif user == 1 and computer == 4:
    var.set("You chose Rock, I chose Spock. \nYou lose")
    lose +=1
    wins.set(wins.get() - 1)
elif user == 2 and computer == 4:
    var.set("You chose Paper, I chose Spock. \nYou win")
    wins.set(wins.get() + 1)

elif user == 3 and computer == 4:
    var.set("You chose Scissors, I chose Spock. \nYou lose")
    lose +=1
    wins.set(wins.get() - 1)
elif user == 5 and computer == 4:
    var.set("You chose Lizard, I chose Spock. \nYou win")
    wins.set(wins.get() + 1)
```

```
    elif user == 1 and computer == 5:
        var.set("You chose Rock, I chose Lizard. \nYou win")
        wins.set(wins.get() + 1)

    elif user == 2 and computer == 5:
        var.set("You chose Paper, I chose Lizard. \nYou lose")
        lose +=1
        wins.set(wins.get() - 1)
    elif user == 3 and computer == 5:
        var.set("You chose Scissors, I chose Lizard. \nYou win")
        wins.set(wins.get() + 1)

    elif user == 4 and computer == 5:
        var.set("You chose Spock, I chose Lizard. \nYou lose")
        lose +=1
        wins.set(wins.get() - 1)
    else:
        var.set("Thanks for playing. \nYou have " + str(win) + " wins and " + str(lose) + " losses.")



top = tkinter.Tk()
top.wm_title("RPS Python GUI")
top.minsize(width=350, height=150)
top.maxsize(width=350, height=150)
B1 = tkinter.Button(top, text ="Rock", command = lambda: rps(win, lose, 1))
B1.grid(row=0, column=1)
B2 = tkinter.Button(top, text ="Paper", command = lambda: rps(win, lose, 2))
```

```
B2.grid(row=0, column=2)
B3 = tkinter.Button(top, text ="Scissors", command = lambda: rps(win, lose, 3))
B3.grid(row=0, column=3)
space = tkinter.Label(top, text="")
space.grid(row=1)
var = StringVar()
var.set('Welcome!')
l = Label(top, textvariable = var)
l.grid(row=2, column=2)
wins = IntVar()
wins.set(win)
w = Label(top, textvariable = wins)
w.grid(row=4, column=2)
labeled = Label(top, text = "Score:")
labeled.grid(row=3, column=2)
copy = Label(top, text= "RPS GUI on Tkinter on Python. By Praveen 2016")
copy.grid(row=5, column=2)
top.mainloop()
```

2- Dice Roll Simulator with Python

```
#importing module for random number generation
import random

#range of the values of a dice
min_val = 1
max_val = 6

#to loop the rolling through user input
roll_again = "yes"

#loop
while roll_again == "yes" or roll_again == "y":
    print("Rolling The Dices...")
    print("The Values are :")

    #generating and printing 1st random integer from 1 to 6
    print(random.randint(min_val, max_val))

    #asking user to roll the dice again. Any input other than yes or y
will terminate the loop
    roll_again = input("Roll the Dices Again?")
```

B:

```
import random
import time

while True:
  dice_rolled = random.randint(1, 6)
  user = str(input(" 'C' for Continue or 'Q' for Quit : ").upper())
  if user == 'C':
    print('Dice rolling …')
    time.sleep(2)
    print(dice_rolled)
    print('———————————-')
  else:
    break
```

3- The logic of Quiz Game with Python

```
def check_guess(guess, answer):
    global score
    still_guessing = True
    attempt = 0
    while still_guessing and attempt < 3:
        if guess.lower() == answer.lower():
            print("Correct Answer")
            score = score + 1
            still_guessing = False
        else:
            if attempt < 2:
                guess = input("Sorry Wrong Answer, try again")
            attempt = attempt + 1
    if attempt == 3:
        print("The Correct answer is ",answer )

score = 0
print("Guess the Animal")
guess1 = input("Which bear lives at the North Pole? ")
check_guess(guess1, "polar bear")
guess2 = input("Which is the fastest land animal? ")
check_guess(guess2, "Cheetah")
guess3 = input("Which is the larger animal? ")
check_guess(guess3, "Blue Whale")
print("Your Score is "+ str(score))
```

4- Number Guessing Game with Python:

```
# to import random module
import random
# to create a range of random numbers between 1-10
n = random.randrange(1,100)
# to take a user input to enter a number
guess = int(input("Enter any number: "))
while n!= guess: # means if n is not equal to the input guess
    # if guess is smaller than n
    if guess < n:
        print("Too low")
        # to again ask for input
        guess = int(input("Enter number again: "))
    # if guess is greater than n
    elif guess > n:
        print("Too high!")
        # to again ask for the user input
        guess = int(input("Enter number again: "))
    # if guess gets equals to n terminate the while loop
    else:
        break
print("you guessed it right!!")
```

B —

```
import random #bring in the random number
import time
number=random.randint(1, 100) #pick the number between 1 and 100


def intro():
   print(name + ", we are going to play a game. I am thinking of a number between 1 and 100")
   time.sleep(.5)
   print("Go ahead. Guess!")


def pick():
   guessesTaken = 0
```

```
while guessesTaken < 10: #if the number of guesses is less than 6
    time.sleep(.25)
    enter=input("Guess: ") #inserts the place to enter guess
    try: #check if a number was entered
        guess = int(enter) #stores the guess as an integer instead of a string

        if guess<=100 and guess>=1: #if they are in range
            guessesTaken=guessesTaken+1 #adds one guess each time the player is wrong
            if guessesTaken<10:
                if guess<number:
                    print("The guess of the number that you have entered is too low")
                if guess>number:
                    print("The guess of the number that you have entered is too high")
                if guess != number:
                    time.sleep(.5)
                    print("Try Again!")
            if guess==number:
                break #if the guess is right, then we are going to jump out of the while block
        if guess>100 or guess<1: #if they aren't in the range
            print("Silly Goose! That number isn't in the range!")
            time.sleep(.25)
            print("Please enter a number between 1 and 100")

    except: #if a number wasn't entered
        print("I don't think that "+enter+" is a number. Sorry")

if guess == number:
    guessesTaken = str(guessesTaken)
```

```
        print('Good job, ' + name + '! You guessed my number in ' + guessesTaken + ' guesses!')


    if guess != number:
        print('Nope. The number I was thinking of was ' + str(number))


playagain="yes"
print("May I ask you for your name?")
name=input() #asks for the name
while playagain=="yes" or playagain=="y" or playagain=="Yes":
    intro()
    pick()
    print("Do you want to play again?")
    playagain=input()
```