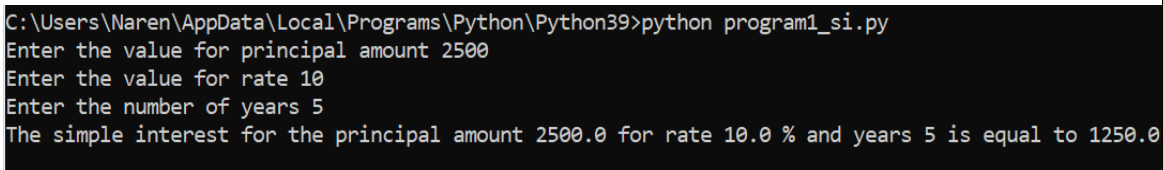


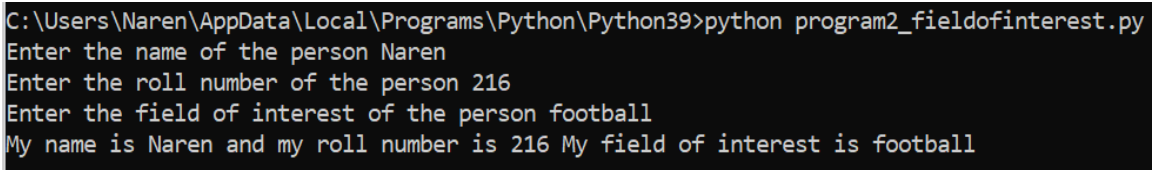
Student Name: NAREN CHANDRASHEKHAR

SRN : PES2UG20CS216

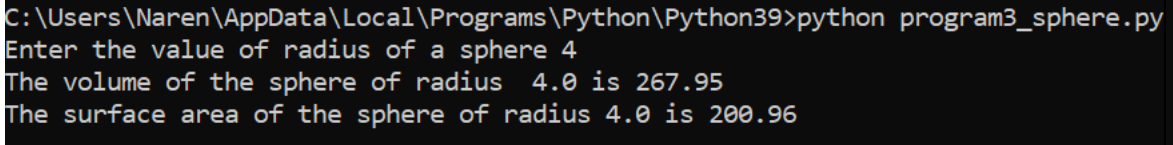
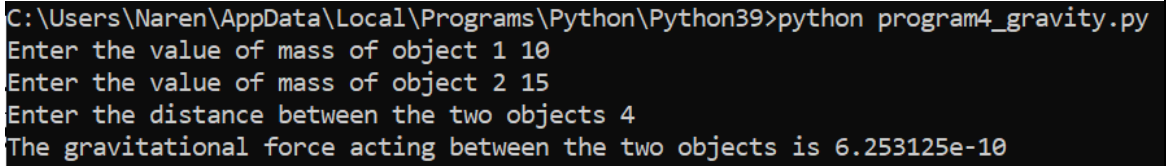
SECTION : G

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| Program 1 | Suppose a person wants to calculate the simple interest for the account he has taken for specified number of years.(read the values from user) |
| | Algorithm: Step1: Start Step2: Read value of principal rate and time Step3: $si = (p*r*t)/100$ Step4: Print value of si Step5: End |
| | Program with appropriate Comments: <pre> """ To find the simple interest for given inputs by the user """ #read the values of principal amount, rate and time from the user p = float(input("Enter the value for principal amount")) r = float(input("Enter the value for rate")) t = int(input("Enter the number of years")) si = (p*r*t)/100 #formula to calculate the simple interest print("The simple interest for the principal amount",p, "for rate",r,"years",t,"is equal to",si) </pre> |
| | Out Put Screen shot:  |
| Program 2 | Accept name, roll number and field of interest from user and print in the below format : my name is abc and my roll number is 123. My field of interest is abc. |
| | Algorithm: Step1: Start Step2: Read values for name, roll number and field of interest |

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| | <p>Step3: Print the value of name, roll number and field of interest</p> <p>Step4: End</p> |
| | <p>Program with appropriate Comments:</p> <pre> """ Accept name, roll number and field of interest from user and print in the below format : my name is abc and my roll number is 123. My field of interest is abc. """ #read value of name, roll number and field of interest name = input("Enter the name of the person ") roll_no = input("Enter the roll number of the person ") field_of_interest = input("Enter the field of interest of the person ") print("My name is",name,"and my roll number is",roll_no, "My field of interest is",field_of_interest) </pre> |
| | <p>Out Put Screen shot:</p>  |
| Progra m 3 | <p>Write a Python program which accepts the radius of a sphere and computes the volume. What is the volume and surface area of a sphere?</p> <p>The volume of a sphere with radius r is $\frac{4}{3} \pi r^3$.</p> |
| | <p>Algorithm:</p> <p>Step1: Start</p> <p>Step2: Read the radius of the sphere</p> <p>Step3: volume = $(\frac{4}{3}) * 3.14 * \text{radius}^3$</p> <p>Step4: surface_area = $4 * 3.14 * \text{radius}^2$</p> <p>Step5: Print the value of volume and surface area of the sphere</p> <p>Step6: End</p> |
| | <p>Program with appropriate Comments:</p> <pre> """ Write a Python program which accepts the radius of a sphere and computes the volume and surface area of a sphere. """ radius = float(input("Enter the value of radius of a sphere ")) volume = (4/3)*3.14*radius**3 #formula to compute volume of sphere </pre> |

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| | <pre>surface_area = 4*3.14*radius**2 #formula to compute surface area of sphere print("The volume of the sphere of radius ",radius,"is {:.2f}".format(volume)) print("The surface area of the sphere of radius",radius,"is {:.2f}".format(surface_area))</pre> |
| | <p>Out Put Screen shot:</p>  <pre>C:\Users\Naren\AppData\Local\Programs\Python\Python39>python program3_sphere.py Enter the value of radius of a sphere 4 The volume of the sphere of radius 4.0 is 267.95 The surface area of the sphere of radius 4.0 is 200.96</pre> |
| Program 4 | <p>Python Program to Find the Gravitational Force Acting Between Two Objects</p> |
| | <p>Algorithm:</p> <p>Step1: Start</p> <p>Step2: Read the value of mass of object 1 and 2</p> <p>Step3: Read the value of the distance between them</p> <p>Step4: Set value of $g = 6.67 \times 10^{-11}$</p> <p>Step5: Calculate value of force, $f = (g * (mass1 * mass2)) / (distance)^2$</p> <p>Step6: Print the value of force between the two objects</p> <p>Step7: End</p> |
| | <p>Program with appropriate Comments:</p> <pre>""" Python Program to Find the Gravitational Force Acting Between Two Objects """ #read values of mass of object 1 and 2 and the distance between them mass1 = float(input("Enter the value of mass of object 1 ")) mass2 = float(input("Enter the value of mass of object 2 ")) distance = float(input("Enter the distance between the two objects ")) g = 6.67*10**-11 #value of constant g f = (g*(mass1*mass2))/(distance)**2 #formula to calculate the gravitational force print("The gravitational force acting between the two objects is",f)</pre> |
| | <p>Out Put Screen shot:</p>  <pre>C:\Users\Naren\AppData\Local\Programs\Python\Python39>python program4_gravity.py Enter the value of mass of object 1 10 Enter the value of mass of object 2 15 Enter the distance between the two objects 4 The gravitational force acting between the two objects is 6.253125e-10</pre> |

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| Program 5 | Write a program to read 4 characters separately from the user. Convert every character to its next alphabet. |
| | <p>Algorithm: /* incrementing the value of character1,character2,character3 and character4 to the next character */</p> <p>Step1: Start Step2: Read the value of character1, character2, character3 and character4 Step3: character1 = character1 + 1 Step4: character2 = character2 + 1 Step5: character3 = character3 + 1 Step6: character4 = character4 + 1 Step7: Print the values of character1, character2, character3 and character4 Step8: End</p> |
| | <p>Program with appropriate Comments: <pre> **** Write a program to read 4 characters separately from the user. Convert every character to its next alphabet. **** #reading the value of 4 characters character1 = input("Enter any character ") character2 = input("Enter any character ") character3 = input("Enter any character ") character4 = input("Enter any character ") #incrementing the value of character1,character2,character3 and character4 #to the next character character1 = chr(ord(character1)+1) character2 = chr(ord(character2)+1) character3 = chr(ord(character3)+1) character4 = chr(ord(character4)+1) print("The incremented four characters are",character1,character2,character3, character4) </pre></p> |
| | Out Put Screen shot: |

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| | <pre>C:\Users\Naren\AppData\Local\Programs\Python\Python39>python program5_character.py Enter any character d Enter any character r Enter any character n Enter any character p The incremented four characters are e s o q</pre> |
| Program 6 | <p>Write a program to Swap the contents of two memory locations using bitwise XOR operation.</p> <p>Note: Do not use either temporary variable or arithmetic operators.</p> |
| | <p>Algorithm:</p> <p>Step1: Start</p> <p>Step2: Read value of two variables a and b</p> <p>Step3: Print the value of variables before swapping</p> <p>Step4: $a = a \oplus b$</p> <p>Step5: $b = a \oplus b$</p> <p>Step6: $a = b \oplus a$</p> <p>Step7: Print the value of variables after swapping</p> <p>Step8: End</p> |
| | <p>Program with appropriate Comments:</p> <pre>""" Program to Swap the contents of two memory locations using bitwise XOR operation. """ a = int(input("Enter the value of a ")) b = int(input("Enter the value of b ")) print("The value of a and b before swapping are",a,b,"respectively") a = a^b b = a^b a = b^a print("The value of a and b after swapping are",a,b,"respectively")</pre> |
| | <p>Out Put Screen shot:</p> |

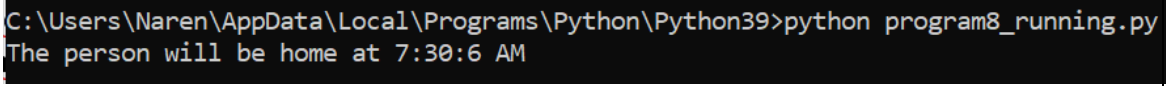
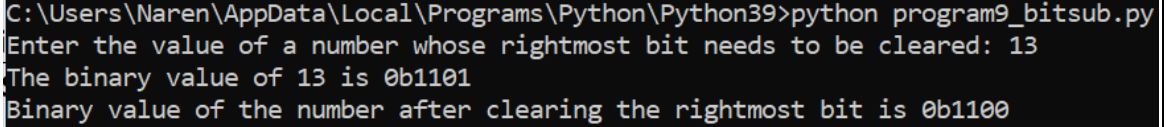
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| | <pre>C:\Users\Naren\AppData\Local\Programs\Python\Python39>python program6_xor.py Enter the value of a 6 Enter the value of b 5 The value of a and b before swapping are 6 5 respectively The value of a and b after swapping are 5 6 respectively</pre> |
| Program 7 | <p>Suppose the cover price of a book is \$24.95, but bookstores get a 40% discount. Shipping costs \$3 for the first copy and 75 cents for each additional copy. What is the total wholesale cost for 60 copies?</p> |
| | <p>Algorithm: Step1: Start Step2: Read the number of books (input 60) Step3: Set value of coverprice = 24.95 Step4: Compute the discount (40%) for the coverprice Step5: Compute total price of 60 books, $\text{total_price} = (\text{coverprice} - (\text{coverprice} * 0.4)) * \text{number} + (3 + (\text{number} - 1) * 0.75)$ Step6: Print the value of the total_price Step7: End</p> |
| | <p>Program with appropriate Comments: <pre>""" Suppose the cover price of a book is \$24.95, but bookstores get a 40% discount. Shipping costs \$3 for the first copy and 75 cents for each additional copy. What is the total wholesale cost for 60 copies? """ #read the number of books number = int(input("Enter the number of books to be shipped ")) coverprice = 24.95 #defining the cover price of each copy #computing total price of the 60 books total_price = (coverprice - (coverprice * 0.4)) * number + (3 + (number - 1) * 0.75) print("The total wholesale cost of", number, "number of books is equal to \${:.2f}" .format(total_price))</pre></p> |
| | <p>Out Put Screen shot:</p> <pre>C:\Users\Naren\AppData\Local\Programs\Python\Python39>python program7_bookprice.py Enter the number of books to be shipped 60 The total wholesale cost of 60 number of books is equal to \$945.45</pre> |
| Program 8 | <p>If person leave house at 6:52 am and run 1 mile at an easy pace (8:15 per</p> |

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| | <p>mile), then 3 miles at tempo (7:12 per mile) and 1 mile at easy pace again, what time do the person get home for breakfast?</p> |
| | <p>Algorithm:</p> <p>Step1: Start</p> <p>Step2: Set value of start_timehour and start_timeminute</p> <p>Step3: Convert running time into seconds</p> <p>Step4: Calculate total running time in seconds $\text{time_inseconds} = \text{easy_pace} * 2 + \text{tempo_pace} * 3$</p> <p>Step5: Calculate running time in minutes, $\text{minutes} = \text{time_inseconds} / 60$</p> <p>Step6: Calculate remaining time in seconds</p> <p>Step7: Add minutes and seconds to the value of start_timehour and start_timeminute</p> <p>Step8: Print when the man will be home for breakfast</p> <p>Step9: End</p> |
| | <p>Program with appropriate Comments:</p> <pre> """ If a person leaves his house at 6:52 am and runs 1 mile at an easy pace (8:15 per mile), then 3 miles at tempo (7:12 per mile) and 1 mile at easy pace again, what time do the person get home for breakfast? """ #defining the time the person left home start_timehour = 6 start_timeminute = 52 #converting hours and minutes into seconds easy_pace = 8*60+15 tempo_pace = 7*60+12 #total running time in seconds time_inseconds = easy_pace*2 + tempo_pace*3 #total running time in minutes minutes = time_inseconds//60 #remaining time in seconds seconds = time_inseconds%60 end_minutes = start_timeminute + minutes #calculating total minutes end_timehour = start_timehour + end_minutes//60 end_minutes = end_minutes%60 </pre> |

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| | <pre>str1="The person will be home at "+str(end_timehour)+":"+str(end_minutes)+":"+str(seconds)+' AM' print(str1)</pre> |
| | <p>Out Put Screen shot:</p>  |
| Program 9 | <p>Python Program to Clear the Rightmost Set Bit of a Number</p> |
| | <p>Algorithm:</p> <p>/* right shifting the value of a will shift the rightmost bit and left shifting value will bring back all bits to original position. Hence the last bit would be cleared */</p> <p>Step1: Start Step2: Read the value of a number in variable a Step3: b = a >> 1 Step4: b = b << 1 Step5: print b Step6: End</p> |
| | <p>Program with appropriate Comments:</p> <pre>""" Python Program to Clear the Rightmost Set Bit of a Number """ #read a value of a number a = int(input("Enter the value of a number whose rightmost bit needs to be cleared: ")) print("The binary value of",a,"is",bin(a)) b = a>>1 #right shifting the value of a to shift all bits to the right b = b<<1 #left shifting value of b to bring back all bits to original position print("Binary value of the number after clearing the rightmost bit is",bin(b))</pre> |
| | <p>Out Put Screen shot:</p>  |
| Program 10 | <p>Write a Python program</p> <p>A) To get a single random character from a specified string.</p> <p>B) Write a program to:</p> <p>i) shuffle students in a class. (Assume no of students in a class are 10)</p> |

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| | <p>ii) to choose one student who would become a Class representative.</p> <p>iii) to create a random sample of size 2 from the available number of population who are the potential candidates to become event coordinators.</p> <p>C) Calculate multiplication of two random float numbers</p> <p>D) To generate a floating-point number within a range.</p> <p>E) Generates a random integer number from the given range.</p> <p>F) To generate the same random number every time.</p> <p>G) Roll a dice in such a way that every time you get the same number.</p> |
| | <p>Algorithm:</p> |
| | <p>Program with appropriate Comments:</p> <pre> import random #A) To get a single random character from a specified string. x = input("Enter a string ") print(random.choice(x)) #B) Let students in the class be represented by roll numbers from 1 to 10 # i) shuffle students in a class. (Assume no of students in a class are 10) students = [1,2,3,4,5,6,7,8,9,10] (random.shuffle(students)) print(students) # ii) to choose one student who would become a Class representative print(random.choice(students)) # iii) to create a random sample of size 2 from the available number of population who are #the potential candidates to become event coordinators. print(random.sample(students,2)) #C) Calculate multiplication of two random float numbers </pre> |

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| | <pre> f1 = (random.random()) f2 = (random.random()) f = f1*f2 print(f) #D) To generate a floating-point number within a range. x = int(input("Enter the start range ")) y = int(input("Enter the end range ")) print(random.uniform(x,y)) #E) Generates a random integer number from the given range. a = int(input("Enter the start range ")) b = int(input("Enter the end range ")) print(random.randint(a,b)) #F) To generate the same random number every time. random.seed(3) print(random.randint(1,10)) random.seed(3) print(random.randint(1,10)) #F using for loop for i in range(2): random.seed(3) print(random.randint(1,10)) #G) Roll a dice in such a way that every time you get the same number. x = int(input("Enter the number of times the dice should be rolled ")) for i in range(x): random.seed(3) print(random.randint(1,6)) </pre> |
| | Out Put Screen shot: |

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C:\Users\Naren\AppData\Local\Programs\Python\Python39>python program10_mix.py
Enter a string dwobsucbkcw
c
[5, 9, 7, 6, 3, 2, 4, 8, 10, 1]
6
[4, 8]
0.12451403704687758
Enter the start range 0
Enter the end range 100
60.64119135380624
Enter the start range 0
Enter the end range 20
13
4
4
4
4
4
Enter the number of times the dice should be rolled 5
2
2
2
2
2
2
```