**Practical 1: Python**

**Topic: Learning Python Shell**

Q.1. From the Python shell, enter the following and observe the results:

(A) 10 + 35

>>> 45

(B) 4\*\*2

>>> 16

(C) 45//10.0

>>> 0.0

(D) 10/3

>>>3.3333333333333335

(E) 2025 % 3

>>> 0

(F) -10+35

>>> 25

Q.2. Write the output after executing the following two statements in python shell:

age = input(‘How old are you?’)

print(‘You are’,age,’years old’)

>>> How old are you? 19

You are 19 years old

Q.3. Execute the following and write the output:

(A) print(“Hello”)

>>> Hello

(B) print(‘1+2’)

>>> 1+2

(C) print(format(24.893952,’.3f’))

>>> 24.893

(D) print(‘apple\ncherry\npeach’)

>>> apple

cherry

peach

(E) print(format(2\*\*10,’.6e’))

>>> 1.024000e+03

Q.4. Use print function in python to output: It’s raining today

>>> print("It's raining today")

Q.5. (A) What is the value of variables num1 and num2 after the following instructions are executed?

(B) Write the values of id(num1) and id(num2).Are they equal?

Q.6. Evaluate the following expressions:

(A) 2 + 9 \* ((3\*12)-8)/10

>>> 27.2

(B) 3 + 2 \* 10

>>> 23

(C) 2 + 5 \* 4 + 3

>>> 25

(D) 20//2\*5

>>> 50

(E) 2\*3 \*\* 2

>>> 18

(F) 2 \*\* 2 \*\* 3

>>> 256

Q.7. Find the results of each of the following division operations:

(A) 5/4

>>> 1.25

(B) 5//4

>>> 1

(C) 5.0//4

>>> 1.0

Q.8. Find the results of the following:

(A) ord(‘1’)

>>> 49

(B) chr(68)

>>> ‘D’

(C) chr(99)

>>> ‘c’

Q.9. Execute the following statements and write down your observations:

>>>n=5

>>>id(n)

>>>k=n

>>>id(k)

>>>n=10

>>>id(n)

>>>id(k)

**Ans.**

1449787984

1449787984

1449788144

1449787984

Q.10. Execute the following statements and write down your observations:

(A) format(‘Hello’,’<20’)

>>>'Hello '

(B) format ('Hello','>20')

>>>' Hello'

(C) format(‘Hello World’,format(‘.’,’.30’),’Have a Nice Day!’)

>>>

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**Practical 2**

**Topic: Simple Programs**

**Q.1.** Write a program that allows the user to enter any integer base and integer exponent, and displays the value of the base raised to that exponent.

**Ans.**

b=int(input('Enter any interger base:'))

e=int(input('Enter any interger exponent:'))

r=b\*\*e

print('The value of base',b,'raised to exponent',e,'is',r)

Q.2. Ramesh’s basic salary is input through the keyboard. His dearness allowance is 40% of basic salary, and house rent allowance is 20% of basic salary. Write a program to calculate his gross salary.

Ans.

basic=float(input('Enter the basic salary: '))

da=(40/100)\*basic

hra=(20/100)\*basic

gross=basic+da+hra

print('Gross Salary is',gross)

Q.3. Temperature of a city on Fahrenheit degree is input through the keyboard. Write a program to convert this temperature into centigrade degree.

Ans.

c=float(input("Enter temperature in degree celcius:"))

f=(c-32)\*5/9

print("The temperature in farenheit degree is:",f)

Q.4. The length and breadth of a rectangle are input through the keyboard. Write a program to calculate area and perimeter of the rectangle.

Ans.

l=float(input('Enter the length of the rectangle: '))

b=float(input('Enter the breadth of the rectangle: '))

a=l\*b

p=2\*(l+b)

print('The area of rectangle is',a,'& the perimeter is',p)

Q.5. Radius of circle is input through the keyboard. Write a program to calculate area and circumference of a circle.

Ans.

r=float(input('Enter the radius of the circle'))

a=3.14\*r\*\*2

c=2\*3.14\*r

print('The are of circle is',a,'& the circumference of a circle is',c)

Q.6. If a four digit number is input through the keyboard, write a program to obtain the sum of the first and last digit of this number.

Ans.

x=float(input("Enter a four digit number:"))

f=x//1000

l=x%10

sum = f+l

print("Sum of first & last number is:",sum)

Q.7. Write a program that prompts the user to enter an upper or lowercase letter and displays the corresponding Unicode encoding.

Ans.

c=input("Enter a character:")

print("Unicode of",c,"is",ord(c))

Q.8. Write a program that allows the user to enter a 4-digit binary number and displays its value in base 10. Each binary digit should be entered one per line, starting with the leftmost digit, as show below

Enter leftmost digit: 1

Enter the next digit: 0

Enter the next digit: 0

Enter the next digit: 1

The value in base 10 is 9

Ans.

a=int(input('Enter leftmost digit: '))

b=int(input('Enter next digit: '))

c=int(input('Enter next digit: '))

d=int(input('Enter next digit: '))

e=a\*2\*\*3

f=b\*2\*\*2

g=c\*2\*\*1

h=d\*2\*\*0

z=e+f+g+h

print('The 4-digit binary numbers value in base 10 is',z)

Q.9. Write a program to calculate simple interest when principal, rate of interest and time period of the investment is input through the keyboard.

Ans.

r=float(input('Enter the rate of interest: '))

i=float(input('Enter the period of investment: '))

p=float(input('Enter the principal amount: '))

si=(p\*r\*i)/100

print('Simple interest is',si)

Q.10. Write a program to accept marks of a student in 5 subjects. Calculate and print the percentage marks obtained by the student.

Ans.

s1=float(input('Enter the marks of first subject out of 100: '))

s2=float(input('Enter the marks of second subject out of 100: '))

s3=float(input('Enter the marks of third subject out of 100: '))

s4=float(input('Enter the marks of fourth subject out of 100: '))

s5=float(input('Enter the marks of fifth subject out of 100: '))

p=(s1+s2+s3+s4+s5)/500\*100

print('The percentage is',p)

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**Practical: 3**

**Topic: Control Statements**

Q.1. Write a program which takes a number from the user and determines if it is positive, negative or zero.

Ans.

n=int(input('Enter a number: '))

if n>0:

print('n is positive')

elif n<0:

print('n is negative')

else:

print('n is zero')

=========================== RESTART: F:\HETAL4.py ===========================

Enter a number: -8

n is negative

>>>

=========================== RESTART: F:\HETAL4.py ===========================

Enter a number: 56

n is positive

>>> 0

0

Q.2. Write a program which determines the larger of the two numbers entered by the user.

Ans.

a=int(input('Enter first number: '))

b=int(input('Enter second number: '))

if a>b:

print(a,'is greater than',b)

elif a<b:

print(b,'is greater than',a)

elif a==b:

print('both are equal')

=========================== RESTART: F:\hetal6.py ===========================

Enter first number: 45

Enter second number: 54

54 is greater than 45

Q.3. Write a program which determines the largest of the three numbers entered by the user.

Ans.

a=int(input('Enter the first number: '))

b=int(input('Enter the second number: '))

c=int(input('Enter the third number: '))

if a>b and a>c:

print(a,'is the largest of the three numbers')

elif b>a and b>c:

print(b,'is the largest of the three numbers')

elif c>a and c>b:

print(c,'is the largest of the three numbers')

elif a==b==c:

print(a,b,c,'are equal') =========================== RESTART: F:\hetal7.py ===========================

Enter the first number: 42

Enter the second number: 56

Enter the third number: 23

56 is the largest of the three numbers

OUTPUT:-

Q.4. Write a program which takes a choice ‘F’ or ‘C’, and the temperature from the user. If user enters ‘F’ then convert the temperature from Fahrenheit to Centigrade degrees and if the user enters ’C’, then convert the temperature from Centigrade degrees to Fahrenheit.

Ans.

ch=input('Enter your choice F or C: ')

if ch=='F':

f=float(input('Enter temperature in farenheit degree: '))

c=(f-32)\*5/9

print('Celcius temperature is',c)

elif ch=='C':

c=float(input('Enter temperature in celcius degree: '))

f=(c\*9/5)+32

print('Farenheit temperature is',f)

Q.5. Write a program to determine whether the number entered is even or odd.

Ans.

m=int(input('Enter a number: '))

if m%2==0:

print('Number is even')

else:

print('Number is odd')

Q.6. The marks obtained by a student in 5 different subjects are input through the keyboard. Write a program to determine the grade of the student as per the following rules:

|  |  |
| --- | --- |
| Percentage | Grade |
| Above or equal to 60 | A |
| Between 50 and 59 | B |
| Between 40 and 49 | C |
| Less than 40 | D |

Ans.

s1=float(input('Enter the marks of first subject out of 100: '))

s2=float(input('Enter the marks of second subject out of 100: '))

s3=float(input('Enter the marks of third subject out of 100: '))

s4=float(input('Enter the marks of fourth subject out of 100: '))

s5=float(input('Enter the marks of fifth subject out of 100: '))

p=(s1+s2+s3+s4+s5)/500\*100

if p>=60:

print('Grade is A')

elif 50<=p<=59:

print('Grade is B')

elif 40<=p<=49:

print('Grade is C')

elif p<40:

print('Grade is D')

Q.7. If cost price and selling price of a product is input through the keyboard, write a program to determine whether the seller has made a profit or incurred loss. Also determine how much profit he made or loss he incurred.

Ans.

sp=float(input('Enter the selling price: '))

cp=float(input('Enter the cost price: '))

if cp>sp:

l=cp-sp

print('It incurred a loss and the loss is',l)

elif cp<sp:

p=sp-cp

print('It made a profit and the profit is',p)

elif sp==cp:

print('There is no loss or profit maid by the seller')

Q.8. Write a program that displays ‘within range’ if a number entered through the keyboard is between 0 and 100, inclusive, and displays ‘out of range’ otherwise.

Ans.

y=int(input('Enter a number: '))

if y>=0 and y<=100:

print('within range')

else:

print('out of range')

Q.9. Accept a character from the user and determine if it is a lowercase letter, uppercase letter, a digit or any special character.

Ans.

ch=input('Enter any character: ')

if 'a'<=ch<='z':

print('Character is in lower case')

elif 'A'<=ch<='Z':

print('Character is in upper case')

elif '0'<=ch<='9':

print('Character is a digit')

else:

print('Character is a special character')

Q.10. In a company, an employee is paid as under: if his basic salary is less than Rs.1500, then HRA is 10% of basic salaryand DA is 90% of basic salary. If his salary is either equal to or above Rs.1500, then HRA is Rs.500 and DA is 98% of basic salary. If the employee’s salary is input through the keyboard, write a program to find his gross salary.

Ans.

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**Practical: 4**

**Topic: While loop**

Q.1. Write a program to add up all even numbers between 100 and 200.

Ans.

Q.2. Write a program to find the factorial of a number n. n is entered through the keyboard.

Ans.

Q.3. Write a program to find first n terms of Fibonacci series where n is entered by the user.

Ans.

Q.4. Write a program to take a number from the user and find the sum of its digits.

Ans.

Q.5. Write a program to take a number from the user and reverse the digits of the number.

Ans.

Q.6. Write a program to print the following patterns:

(a) (b)

\* 5 5 5 5 5

\* \* 4 4 4 4

\* \* \* 3 3 3

\* \* \* \* 2 2

\* \* \* \* \* 1

Ans.

Q.7. Write a program to containing a pair of nested while loops that displays the integer values 1 – 100, ten numbers per now, with the columns aligned properly (use format function to align).

Ans.

Q.8. Write a program to determine if a given number is a prime or not.

Ans.

Q.9. Write a program to determine first n prime numbers where n is entered through the keyboard.

Ans.

Q.10. Write a program in which the user can enter any number of positive or negative values, that displays the number of positive values entered , as well as the number of negative values.

Ans.

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**Practical: 5**

**Topic: Sequences (Lists, Tuples and Strings)**

Q.1. Write a python program that prompts the user for a list of integers, stores in another list only those values that is between 1 and 100 and displays the list.

**Program:**

Inp=input(‘Enter a list of integers, separated by comma: ‘)

numStr = inp.split(‘,’)

numlst = []

for k in numStr:

numlst.append(int(k))

print(numlst)

newlst = []

for k in numlst:

if 1 <= k <= 100:

newlst.append(k)

print(newlst)

Q.2. Write a program that prompts the user for a list of integers, stores in another list only those values that are in tuple valid\_values, and displays the resulting list.

**Program:**

Inp=input(‘Enter a list of integers, separated by comma: ‘)

nuStr = inp.split(‘,’)

numlst=[]

for k in numStr:

numlst.appent(int(k))

valid\_values = (30,-2,6)

newlst=[]

for k in numlst:

if k in alid\_values:

newlst.append(k)

print(newlst)

Q.3. Write a python program that creates a list of tuples where each tuple is of the form (user name, password). Prompt the user and password. If the user entered username and password is in the list print ’correct’, else print ’incorrect’.

**Program:**

userlst = [(‘ajay,’112’),(‘prabha’,’456’),(‘ruchi’,’a12’)(‘jeet’,’3b1’)]

name = input(‘Enter user name: ‘)

passwd=input(‘Enter password: ‘)

for n,p in userlst:

if name.strip().;ower() == n and passwd.strip().lower() == p:

print(‘correct’)

break:

else:

print(‘incorrect’)

Q.4.