Que) How to handle exception in python.

— 1) exception handling is process that provides a way to handle exception that occur at runtime.
2) the exception handling is done by writing exception handlers in the program.
3) theree are three blocks that are used in the exception handling process.

① try: set of statements that may cause error during runtime are to be written in the try block.

② excep block: the except block executed only when a certain type ~~of~~ as exception occur in the execution of statement written in try block.

③ finally block: the set of statement that are used to clean up the resource used by the program.

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Que) What is lambda funtn ? Give Example.

→ It is a small anonymous funtn. A lambda funtn can take any number of arguments but can only have one expression.

syntax: lambda [arg1, [arg2, ... argn]]: Expression

Example.

long = max(ftip, key=lambda leg: leg[2])

~~two basic scope~~ Differe. betn

local variable	Global variable.
1) are declare inside a function	2) are declared outside the funtn
2) LV are alive only for a function	2) GV are alive till the end of program
3) Accessed only by the statements inside funtn.	3) Accesed by any statement in entire program.

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Que> write a py print a dictionary where the keys are no. betn 1 & 15 & the values are the square of the key.

→
```
d = dict()
for x in range(1, 16):
    d[x] = x**2
print(d)
```

Que> write a py to display power of 2 upto a given no using anyonyms funtn.

→
```
terms = int(input("How many term?"))

result = list(map(lambda x: 2 ** x, range(terms)))

print("the total term is:", terms)

for i in range(terms):
    print("2 raised to power", i, "is", result[i])
```

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Que) Write a program to get a single string from two given strings, separated by space & swap the 1st two character of each string

→ sample i/p = 'abc', 'xyz'
Excepted = 'xyz' 'xycabz'

```
str1 = input("Enter first string")
str2 = input("Enter second string:")

new_a = str2[:2] + str1[2:]
new_b = str1[:2] + str2[2:]

print("the new string after swapping first two character of both string:", (new_a+' '+new_b))
```

Que) write a py program to check if a given key already exist in a dictionary

→
```
d = {1:10, 2:20, 3:30, 4:40, 5:50, 6:60}
def is_key_present(x):

    if x in d:
        print('key is present in the dictionary')
    else:
        print('key is Not present in the dictionary')

is_key_present(5)
is_key_present(9).
```

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Exception Handling:

i) Python has many built-in exception that are raised when your prg encounter an error.

ii) An exception is also called as runtime error

iii) An exception is an error that occurs during execution of program.

iv) An except is a error that happens during execution of prg. when that error occurs, python generate an exception that can be handled which avoids the program to crash.

- three type of error occurs:

1. Compile time errors: occurs ~~during the runtime of a program~~ at the time of compilation.
2. Run time Errors: occurs during the runtime of a program
3. Logical error: occurs due to wrong logic written in the program.

Exception can be either built-in Exception or user defined Exception.

built in Exception: ArithmeticError, Exception, IOError, ImportError.

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Que) Demonstrate list slicing

- we can access a range of items in a list using the slicing operator, : (colon).
- syntax : <list name>[index]
- to access values in lists, use the square bracket for ~~sle~~ slicing along with the index or indices to obtain value available at that index.

Que) Explain union & intersection with example.

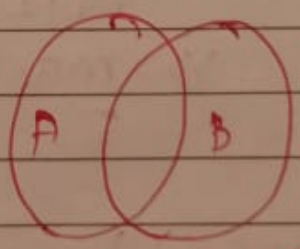
Union : 1) the union operation on two sets produces a new set containing all the distinct elements from both the sets.

2) union operation performed on two sets returns all the element from both the sets.

3) it is performed by using | operator.

Example:

```
>>> A = {1,2,4,6,8}
>>> B = {1,2,3,4,5}
>>> C = A|B
>>> C
{1,2,3,4,5,8,6}
```



union operation

Intersection :

1. Intersection operation on two sets produces a new set containg only the common element from both the sets.
2. intersection operation performed on two set returns all the element which are common in both sets.

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Que) Write a python program to check for zero Division Error Exception

→
```
x = input(input("Enter first value"))
y = int(input("Enter second value"))
try:
    result=x/y
except ZeroDivinonError:
        print("Division by zero")
else:
    print("Result is:", result)
finally:
    print("Execute finally clause")
```

Que) write a python prg to find gcd of a number using recurssion.

→
```
def gcd(a,b):
    if (b==0):
        return a
    else:
        return gcd (b, a%.b)

a= int(input("Enter first number:"))
b=int(input("Enter second number :"))
GCD = gcd(a,b)
print("GCD is:")
print(GCD)
```

usage dictory copy(): Return a copy of the dictionary

```
>>dict = {1: "vijay' 2 :'Amar'}
>>> x = dict.copy()
>>>x:{ 2:'vijay' 2 :'Amar'}
```

2] get(): return the value of specified key.

```
>>> dict = {'Name':'vijay', 'age': 40}
>>> dict.get('name')
'vijay'.
```

3] items(): Return a list containing the a tuple for each key value pair.

4] key(): Returns a list containg the dictory' keys.

set: is an unordered collection of items.
set itself is mutable.

Regular expression

i) A regular Expression or RegEX or RES is a sequence of characters that forms a search pattern.

ii) Regular exp can be defined as the sequence of characters which are used to search for a pattern in a string.

iii) Regular expre widely used in UNIX world.

two types of RegEX

1) Basic regular Ex:

2) Extended regular Exp:

Metacharacter

1) ^ : matches the start of the string

2) \t \n, \r, \f: Tab, newline, return, form feed.

3) {m} : matches the preceding character exactly m times

4) + : matches the precending character one or one times

ab+c matches 'abc', 'abbc'

5) ? : matches the precending character zero or one time ab!c matches 'ac' or 'abc'.

Adv Recursion: 1) make the code look clean & elegant
2) sequence generation is easier 3) complex task can be broken into simple sub-prb using recursion

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Recursion

i) Recursion is a way of programing or coding a prg. in which a funtn calls itself one or more times in its body.

ii) A funtn is said to be a recursive if it calls itself.

filter()

the filter() function in python takes in a function & a list as arguments. this offers an elegant way to filter out all the elements of sequence for which the funtn returns true.

map()

reduce()

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Built-in string methods.

i) capitalize(): makes the first letter of the string capital EX: s1 = "python progra"
>>> s1.capitalize()

ii) isdigit(): Returns true if string contains only digit & false otherwis.

iii) isspace(): return true if string contain only whitespace character & false otherwise.

iv) isupper(): Return true if string

Unicode string
python string are stored internally as 8-bit while unicode string are stored as 16-bit unicod
unicode string use the prefix.

range()
range funtn returns a sequence of number starting from 0 by default & increments by 1.

2) readline(): Reads a line of the file & returns in form of string.

syntax : file_objet.readline([n])

Ex: f = open("sample.txt", "r")
print(f.readline())

Que) → write a program to read an entire text file.

```
q = str(input("Enter the name of the file with .txt extension:"))
file2 = open(q,'r')
line = file2.readline()
while (line != ""):
    print(line)
    line = file2.readline()
file2.close()
```

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Que) What are the type of File in python

→ 1) text files: text files are simple texts in human readable format

2) Binary Files: Binary files have binary data (0s & 1s) which is understood by the computer.

Que) List any two funtⁿ in math module

→ 1) trignometric Funtⁿ, logarithmic funtⁿ, angle conversion funtⁿ, representation funtⁿ.

Que) which are method used to read file? Explain any two with example

→ To read a file in python we must open a file in reading mode (r or rt)
: there are three ways to read data from a file.

1. read(): retors the read bytes in form of a string. read n bytes, if no n specified, read entire file.

syntax: File_object.read([n])

EX: f = open("sample.txt", "r")
print(f.read()).

Modules:

- modules are primarily the (.py) files which contain python programming code defining funtn, class, variables etc. A file containing .py python code is called module.
- In python, a module is a file containg python defination & statement.
- A module may contain one or more function, classes, variables, constant or any other resources.

Ex: modules → math, cmath, number, decimal.

Ex: math_operation.py

```
def add(x, y):
    return x+y
```

Packages

1) package is a collection of python modules
2) package is a hierarchical file directory structure that defines a single python appl^n enviroment that consists of modules & subpackage & so on.
3) a package is a directory of python modules containing an additional __init__.py file.
4) numpy & scipy are standard package used in python programming.

Ex: my_calculator // package name.

- __init__.py
- math_operations.py
- advanced_operation.py

write to find the reverse of no.

```
n=int(input('Enter a number:'))
rev=0
while(n>0):
    rem=n%10
    rev=rev*10+rem
  n=int(n/10)
print('Reverse the no=',rev)
```

for loop

for loop in python is used to iterate the stat^n or a part of the program several times.

Syntax: for iterating_var in seq:
    statment

```
EX: list=[10,20,30,40,50]
    for x in list:
        print(x)
```

o/p 10 20 30 40 50

prg to find factorial of given number

```
num = int(input("Enter number:"))
fact=1
if num<0:
   print("sorry, fact does not exsit for negativ no")
elif num==0:
      print("the factorial of 0 is 1")
else :
    for i in range(1,num+1)
        fact=fact*i;
print("the factor of", num, "is", fact)
```

o/p: Enter no: 5
the factior of 5 is 120.

string:
i) python string is a sequence of characters.
ii) Python string are immutable sequence of unicode pt.
iii) string in python support unicode charackers.

to declare a string, put the sequence of character inside either single quotes, double or triple quotes. & then assig it to a variable.

```
my_string='Hello'
print(my_string)
```

o/p: Hello.

Nested for & while loop:
loops within the loops or when one loop is inserted completely within another loop then it is called nested loop.

syntax : for var in seq :
    for var in seq :
        statemets(s)
    statement

pass statement
it is used when a statement is required syntactically but we do not want any command or code to execute.
ii) Pass stat^n is a null operation, nothing happens when it executes.

prog find out whether the i/p no is perfect or no!

```
n= int(input("Enter number"))
sum=0
for i in range(1,n):
    if n%.i==0,
        sum=sum+i
if sum==n:
    print(n,'is perfect number')
else
    print(n,'is not perfect no').
```

o/p: 20
is not a no.

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Operator precendence.
when an expression has two or more operators we need to identify the correct sequence to evaluate these operators. this is because the final answer changes depending on the seq.
EX: 10-4*2 answer is 2 mult^n has higher preced.

while loop:
while loop stat^n in python prog languag repeatedly executes a target stat^n as long as given cond^n is true
syntax: while cond^n:
        stat^n

Write py prg to check the i/p no. is Armstrong:

```
n = int(input('Enter A numer:'))
num = n
sum = 0
while(n>0):
    rem = n%10
    sum = sum+rem*rem*rem
    n = int(n/10)
if num == sum:
    print(num, "is armstrong")
else:
    print(num, "is not armsttong")
```

o/p
Ente no = 153
153 is armstrong.

list math module funtn

i) floor() 2) cos() 3) cosh(), 4) exp() 5) factorial()
9) fmod(). 10) fabs()

How to create void funtn
the void funtn are those funtn which do not return any value.
EX:

Anonymous funtn
i) Anonymous funtn are the funtn that does not has a name
ii) in pythod anonymous funtn are defined using the lambda keyword.
Henie Anonymous funtn called lamda funtn.
iii) A lambda funtn can take any number of argument but can have only 1 expression.
iv) lamda is created without using def keyword.
syntax: lambda [arg1, arg2, ...]:[Expressio]

return statment: is used to exit a function.

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python is case sensitive language.comm
yes. this means it treats uppercase & lowercase letters differently.

list the types of type conversion in python
i) Implicit type ——
ii) Explicit

3) it is denoted by & operator

EX: >>> A = {1,2,4,6,8}
>>> B = {1,2,3,4,5}
>>> C = A & B
>>> C
{1,2,4}

Q.e) Explain any 2 built-in list funtn

→ 1) len(list): it returns the length of list

Example: >>> list1
[1,2,3,4,5]
>>> len(list1)
5

2) max(list): it returns the items that has the maximum value in a list

EX: list1
[1,2,3,4,5]
>>> max(list1)
5

3) sum(list) = calculates sum of all the element of list

EX: list1
[1,2,3,4,5]
>>> sum(list1)
15

4) min(list) 5) list(seq) → it converts tople into list

extend() of list

list1.extend(list2) : this extend() method take a list & adds it to the end.

- extend() method extends a list by appending items. we can add several items using extend() method.

Built-list funct & meth

i) len(list): it returns the length of the list

```
>>> list1 : [1,2,3,4,5]
>>> len(list) 5
```

ii) max(list): it returns the item that has the maximum value in list

iii) sum(list): calculate sum of all the element of list

function:

i) A funtⁿ is defined as a block of organized, reusable code used to perform a single, realated action.

ii) function are only executed when they are specifically called.

two types of functio

i) Built-In: funtⁿ that are predefined or built-in & organized into a library

ii) User-defined: functⁿ that are created by the programmer.

Difference betn tuple & list

i) list has variable length, tuple has fixed length
ii) list has more functionality than the tuple.
iii) tuple are heterogeneous & list are homogeneous
iv) tuple show structure & list show order.

Basic tuple opera

1. concatenation & Repetition:
we use + operator to combile two tup called conca
2. * is used to repeat the element in tuple

2. membership funtn.

Built-in-tuple funtn

1) len(tuple) 2) tuple(seq) 3) min(tuple)

Dictionaries

dictionary data structure is used to stole key value pair indexed by keys.

Ex: Emp = {"ID": 20, "Name": "Amar", "Gender": Male}

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comments:
i) comment writing is a good programing practice
ii) comment are non-executable line in prg.
iii) two types comment
i) single line (#)
are created simply by beginning a line with the (#) chara. they are automatically terminated by the end of line
EX: #print is a statement
print('Hello pytho')
ii) Multiple line comment (''').

Difference betn tuple & list

tuple is an ordered sequence of items same as list. the only difference is that tuples are immutable. tuples one created cannot be modified. it is defined within parentheses()

python is a scripting language. comment python uses an interpreter to translate & run its code. Hence.

what is user defined module? EX.
the modules, which are created by the user to simply their project EX: test.py

python is case sensitive language.comm
yes. this means it treats uppercase & lowercase letters differently.

list the types of type conversion in python
i) Implicit type ——
ii) Explicit

multi-line statement-

1. Explicit line continuation: statemen in python typically end with a newline allow the use of the line continuation character (\) to denote that line should continue
EX: stat = line_one+\
line_two+\
—

2. Emplicit line: statⁿ contained within the [], {} or () brackets do not need to use the line continuation character
EX: days = ['Monday', '———].

operators
i) operators are used to perform operation on variables & values.
ii) In python, the operator can be unary operator or binaray.

1. unary: with only one operand.
—, -ve are called unary

2. Binary: with two operands, they are also used to compare numeric values & string valu
syntax: oper1 operator oper2.

Identity operator: is, is not
membership: in, not in.

what is dry run in python

A dry run is the process of a programmer manually working through their code to trace the value of variables

features of python prg

1. simple & easy-to-understand: python ~~pro~~ is a simple language with few keywords, simple structure & its syntax is also clearly defined this makes python a beginner's lang. In python programming programs are easy to write & execute.

2. object-oriented: python supports(oop) concepts that encapsulate code within objects. All concept in oop like data hiding, operator overloading, inheritance etc. can be well written in python.

3. platform independance: python can run on both hardware & sofware platform, platforms like windows, unix, linux etc.

4. Interactive & interpreted: python is processed at runtime by interpreter. we do not need to compile program before executing it. interactive mode allows interactive testing & debugging of code.

5. Dynamic: python provides very high-level dynamic data types & support dynamic type checking. it also support automatic garbage coll^n.

Appln

1. Web Appln: we can use python to develop web application. it provides libraries to handle internet protocols such as HTML, XML etc.
2. Software Development: python is helpful for software development process it works as a support language.
3. Console based Appln: we can use python to develop console based appln for Ex. Ipython.
4. Audio/video: python is awesome to perform multiple task & can be used to develop multimedia appn.

Identifiers

i) python identifier is a name give to a funtn, class, variables, module that is used in python program.
ii) An identifiers can be combination of uppercase letter, lowercase, underscore & digit.
iii) we can use underscores to seperate multiple words in the identifier ex: Emp_salary.
iv) Identifier start with letter which can be alphabet
v) Identifier can be of any length.
vi) we cannot use python keyword as identifiers
vii) Sepecial character such as !. @ & $ are not allowed within identifiers.

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short note on datatypes in python

i) the type of data value that can be store in an identifier/variable is know as its data type

ii) the data type determines how much memory is allocated to store data and what operation can be performed on it

iii) the data stored in memory can be of many types

iv) python handles several data types

v) python has various standard data types that are used to define operations possible on them.

vi) Data types in python programming includes:

1) Numbers: Represents numeric data to perform mathmatical operations. Number can be integers, float, Fraction.

2) string: Represents text characters, special sym. or alphanumeric data. string is sequence of unicode characters.

3) List: Represents sequential data that the programmer wishes to sort, merge etc.

4) Tuple: Represents sequential data with the litle difference from list

5) Dictionary: Represents a collection of data that associated a unique key with each val.

6) Boolean: Represent true value (t & f)

7) set: is an unordered collection of unique data items.