

13th Feb Assignment

February 21, 2023

1 Assignment 13

Q1. Explain why we have to use the Exception class while creating a Custom Exception.

Ans. Exception is the base class of the custom exception class. It has all the method having custom exception class. It has broad no. of exception in it so we use exception class instead of custom exception.

Q2. Write a python program to print Python Exception Hierarchy.

Ans. For printing the tree hierarchy we will use inspect module in Python. The inspect module provides useful functions to get information about objects such as modules, classes, methods, functions, and code objects. For example, it can help you examine the contents of a class, extract and format the argument list for a function.

`inspect.getclasstree()` arranges the given list of classes into a hierarchy of nested lists. Where a nested list appears, it contains classes derived from the class whose entry immediately precedes the list.

If the unique argument is true, exactly one entry appears in the returned structure for each class in the given list. Otherwise, classes using multiple inheritance and their descendants will appear multiple times.

```
[1]: #program to print hierarchy
      # import inspect module
      import inspect

      # our treeClass function
      def treeClass(cls, ind = 0):

          # print name of the class
          print ('-' * ind, cls.__name__)

          # iterating through subclasses
          for i in cls.__subclasses__():
              treeClass(i, ind + 3)
```

```

print("Hierarchy for Built-in exceptions is : ")

# inspect.getmro() Return a tuple
# of class cls's base classes.

# building a tree hierarchy
inspect.getclasstree(inspect.getmro(BaseException))

# function call
treeClass(BaseException)

```

Hierarchy for Built-in exceptions is :

```

BaseException
--- Exception
----- TypeError
----- FloatOperation
----- MultipartConversionError
----- StopAsyncIteration
----- StopIteration
----- ImportError
----- ModuleNotFoundError
----- ZipImportError
----- OSError
----- ConnectionError
----- BrokenPipeError
----- ConnectionAbortedError
----- ConnectionRefusedError
----- ConnectionResetError
----- RemoteDisconnected
----- BlockingIOError
----- ChildProcessError
----- FileExistsError
----- FileNotFoundError
----- IsADirectoryError
----- NotADirectoryError
----- InterruptedError
----- InterruptedSystemCall
----- PermissionError
----- ProcessLookupError
----- TimeoutError
----- UnsupportedOperation
----- itimer_error
----- herror
----- gaierror
----- SSLError
----- SSLCertVerificationError
----- SSLZeroReturnError

```

```

----- SSLWantWriteError
----- SSLWantReadError
----- SSLSyscallError
----- SSLEOFError
----- Error
----- SameFileError
----- SpecialFileError
----- ExecError
----- ReadError
----- URLError
----- HTTPError
----- ContentTooShortError
----- BadGzipFile
----- EOFError
----- IncompleteReadError
----- RuntimeError
----- RecursionError
----- NotImplementedError
----- ZMQVersionError
----- StdinNotImplementedError
----- _DeadlockError
----- BrokenBarrierError
----- BrokenExecutor
----- BrokenThreadPool
----- SendfileNotAvailableError
----- ExtractionError
----- VariableError
----- NameError
----- UnboundLocalError
----- AttributeError
----- FrozenInstanceError
----- SyntaxError
----- IndentationError
----- TabError
----- LookupError
----- IndexError
----- KeyError
----- NoSuchKernel
----- UnknownBackend
----- CodecRegistryError
----- ValueError
----- UnicodeError
----- UnicodeEncodeError
----- UnicodeDecodeError
----- UnicodeTranslateError
----- UnsupportedOperation
----- JSONDecodeError
----- SSLCertVerificationError

```

```

----- Error
----- UnsupportedDigestmodError
----- IllegalMonthError
----- IllegalWeekdayError
----- ParserError
----- ClassNotFound
----- ClipboardEmpty
----- MessageDefect
----- NoBoundaryInMultipartDefect
----- StartBoundaryNotFoundDefect
----- CloseBoundaryNotFoundDefect
----- FirstHeaderLineIsContinuationDefect
----- MisplacedEnvelopeHeaderDefect
----- MissingHeaderBodySeparatorDefect
----- MultipartInvariantViolationDefect
----- InvalidMultipartContentTransferEncodingDefect
----- UndecodableBytesDefect
----- InvalidBase64PaddingDefect
----- InvalidBase64CharactersDefect
----- InvalidBase64LengthDefect
----- HeaderDefect
----- InvalidHeaderDefect
----- HeaderMissingRequiredValue
----- NonPrintableDefect
----- ObsoleteHeaderDefect
----- NonASCIIILocalPartDefect
----- InvalidDateDefect
----- MacroToEdit
----- InvalidFileException
----- UnequalIterablesError
----- InvalidVersion
----- _InvalidELFFileHeader
----- InvalidWheelFilename
----- InvalidSdistFilename
----- InvalidSpecifier
----- InvalidMarker
----- UndefinedComparison
----- UndefinedEnvironmentName
----- InvalidRequirement
----- RequirementParseError
----- InvalidVersion
----- AssertionError
----- ArithmeticError
----- FloatingPointError
----- OverflowError
----- ZeroDivisionError
----- DivisionByZero
----- DivisionUndefined

```

```

----- DecimalException
----- Clamped
----- Rounded
----- Underflow
----- Overflow
----- Inexact
----- Underflow
----- Overflow
----- Subnormal
----- Underflow
----- DivisionByZero
----- FloatOperation
----- InvalidOperation
----- ConversionSyntax
----- DivisionImpossible
----- DivisionUndefined
----- InvalidContext
----- SystemError
----- CodecRegistryError
----- ReferenceError
----- MemoryError
----- BufferError
----- Warning
----- UserWarning
----- GetPassWarning
----- FormatterWarning
----- EncodingWarning
----- DeprecationWarning
----- ProvisionalWarning
----- PendingDeprecationWarning
----- SyntaxWarning
----- RuntimeWarning
----- ProactorSelectorThreadWarning
----- UnknownTimezoneWarning
----- PEP440Warning
----- FutureWarning
----- ProvisionalCompleterWarning
----- ImportWarning
----- UnicodeWarning
----- BytesWarning
----- ResourceWarning
----- DeprecatedTzFormatWarning
----- PkgResourcesDeprecationWarning
----- _OptionError
----- _Error
----- error
----- Verbose
----- Error

```

```

----- SubprocessError
----- CalledProcessError
----- TimeoutExpired
----- TokenError
----- StopTokenizing
----- ClassFoundException
----- EndOfBlock
----- TraitError
----- Error
----- Error
----- CancelledError
----- TimeoutError
----- InvalidStateError
----- _GiveupOnSendfile
----- error
----- Incomplete
----- TimeoutError
----- InvalidStateError
----- LimitOverrunError
----- QueueEmpty
----- QueueFull
----- Empty
----- Full
----- ArgumentError
----- ZMQBaseError
----- ZMQError
----- ContextTerminated
----- Again
----- InterruptedSystemCall
----- ZMQBindError
----- NotDone
----- PickleError
----- PicklingError
----- UnpicklingError
----- _Stop
----- ArgumentError
----- ArgumentTypeError
----- ConfigError
----- ConfigLoaderError
----- ArgumentError
----- ConfigFileNotFound
----- ConfigurableError
----- MultipleInstanceError
----- ApplicationError
----- error
----- TimeoutError
----- error
----- ReturnValueIgnoredError

```

```

----- KeyReuseError
----- UnknownKeyError
----- LeakedCallbackError
----- BadYieldError
----- ReturnValueIgnoredError
----- Return
----- InvalidPortNumber
----- error
----- LZMAError
----- RegistryError
----- _GiveupOnFastCopy
----- Error
----- NoSectionError
----- DuplicateSectionError
----- DuplicateOptionError
----- NoOptionError
----- InterpolationError
----- InterpolationMissingOptionError
----- InterpolationSyntaxError
----- InterpolationDepthError
----- ParsingError
----- MissingSectionHeaderError
----- NoIPAddresses
----- BadZipFile
----- LargeZipFile
----- BadEntryPoint
----- NoSuchEntryPoint
----- DuplicateKernelError
----- ErrorDuringImport
----- NotOneValueFound
----- CannotEval
----- OptionError
----- BdbQuit
----- Restart
----- ExceptionPexpect
----- EOF
----- TIMEOUT
----- PtyProcessError
----- FindCmdError
----- HomeDirError
----- ProfileDirError
----- IPythonCoreError
----- TryNext
----- UsageError
----- StdinNotImplementedError
----- InputRejected
----- GetoptError
----- ErrorToken

```

- PrefilterError
- AliasError
- InvalidAliasError
- Error
- InterfaceError
- DatabaseError
- InternalError
- OperationalError
- ProgrammingError
- IntegrityError
- DataError
- NotSupportedError
- Warning
- SpaceInInput
- DOMException
- IndexSizeErr
- DomstringSizeErr
- HierarchyRequestErr
- WrongDocumentErr
- InvalidCharacterErr
- NoDataAllowedErr
- NoModificationAllowedErr
- NotFoundErr
- NotSupportedErr
- InuseAttributeErr
- InvalidStateErr
- SyntaxErr
- InvalidModificationErr
- NamespaceErr
- InvalidAccessErr
- ValidationErr
- ValidationError
- EditReadOnlyBuffer
- _Retry
- InvalidLayoutError
- HeightIsUnknownError
- ParserSyntaxError
- InternalParseError
- _PositionUpdatingFinished
- SimpleGetItemNotFound
- UncaughtAttributeError
- HasNoContext
- ParamIssue
- _JediError
- InternalError
- WrongVersion
- RefactoringError
- OnErrorLeaf

- InvalidPythonEnvironment
- MessageError
- MessageParseError
- HeaderParseError
- BoundaryError
- MultipartConversionError
- CharsetError
- Error
- HTTPException
- NotConnected
- InvalidURL
- UnknownProtocol
- UnknownTransferEncoding
- UnimplementedFileMode
- IncompleteRead
- ImproperConnectionState
- CannotSendRequest
- CannotSendHeader
- ResponseNotReady
- BadStatusLine
- RemoteDisconnected
- LineTooLong
- InteractivelyDefined
- KillEmbedded
- Error
- NoSuchProcess
- ZombieProcess
- AccessDenied
- TimeoutExpired
- _Ipv6UnsupportedError
- QueueEmpty
- QueueFull
- DebuggerInitializationError
- ExpatError
- Error
- ProtocolError
- ResponseError
- Fault
- ParseBaseException
- ParseException
- ParseFatalException
- ParseSyntaxException
- RecursiveGrammarException
- ResolutionError
- VersionConflict
- ContextualVersionConflict
- DistributionNotFound
- UnknownExtra

```

----- _Error
----- UnableToResolveVariableException
----- InvalidTypeInArgsException
--- GeneratorExit
--- SystemExit
--- KeyboardInterrupt
--- CancelledError
--- AbortThread

```

Q3. What errors are defined in the ArithmeticError class? Explain any two with an example.

Ans. There are three errors defined in arithmetic error class which are:

- Overflow error
- ZeroDivision error
- Floating point error

```

[5]: #ZeroDivisionError
try:
    a = 10/0
    print (a)
except ArithmeticError as a:
    print ("This statement is raising an arithmetic exception.")

```

This statement is raising an arithmetic exception.

```

[11]: #you may get weird results when working with floating point numbers
try:
    print(10.2-10.0)
except FloatingPointError as f:
    print(f)

```

0.19999999999999993

Q4. Why LookupError class is used? Explain with an example KeyError and IndexError.

Ans. LookupError Exception is the Base class for errors raised when something can't be found.

```

[13]: #index error
try:
    ls=[1,2,3,4,5]
    print(ls[6])
except IndexError as i:
    print(i)

```

list index out of range

```
[17]: #key error
try:
    d={'name':'Jp','age':'20'}
    print(d['key'])
except KeyError as k:
    print('This is because of key error')
```

This is because of key error

Q5. Explain ImportError. What is ModuleNotFoundError?

Ans. ImportError occurs when the Python program tries to import module which does not exist in the private table.

ModuleNotFoundError error occurs when you're trying to access or use a module that cannot be found.

Q6. List down some best practices for exception handling in python.

Ans. The list of some best practices for exception handling in python are:

- Use always a specific exception not Exception base class
- Always try to log records
- Always avoid to write multiple exception handling
- Always try to prepare a proper documentation
- Always clean up the resource after completion