

## **INDEX**

1) OOP's Part – 1	1
2) OOP's Part – 2	30
3) OOP's Part – 3	58
4) OOP's Part – 4	71
5) Exception Handling	83
6) File Handling	104
7) Multi Threading	123
8) Python Database Programming	151
9) Regular Expressions & Web Scraping	166
10) Decorator Functions	180
11) Generator Functions	185
12) Assertions	190
13) Python Logging	193



## **DETAILED INDEX**

⋒OOP'sPart−1~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~ 1
What is Class?	2
How to define a Class?	2
What is Object?	3
What is Reference Variable?	3
Self Variable	4
Constructor Concept	4
Differences between Methods and Constructors	6
Types of Variables	6
Instance Variables (Object Level Variables)	
Static Variables (Class Level Variables)	
Local variables (Method Level Variables)	
Where we can declare Instance Variables	6
Inside Constructor by using self variable	
Inside Instance Method by using self variable	
Outside of the class by using object reference variable	
How to Access Instance Variables	8
How to delete Instance Variable from the Object	8
<b>⊕</b> Static Variables	10
🚱 Instance Variable vs Static Variable	. 10
🚱 Various Places to declare Static Variables	. 10
🔂 How to access Static Variables	. 11
♦ Where we can modify the Value of Static Variable	
How to Delete Static Variables of a Class	. 15
🔂 Local Variables	. 18
🔂 Types of Methods	. 19
Instance Methods	
Class Methods	
Static Methods	



Setter and Getter Methods	20
Passing Members of One Class to Another Class	23
Inner Classes	24
Garbage Collection	27
How to enable and disable Garbage Collector in our Program	27
Destructors	
How to find the Number of References of an Object	29
Inheritance	
By Composition (Has-ARelationship)	
By Inheritance (IS-A Relationship	
IS-A vs HAS-A Relationship	36
Composition vs Aggregation	38
Types of Inheritance	41
SingleInheritance	
Multi Level Inheritance	
Hierarchical Inheritance	
Multiple Inheritance	
HybridInheritance	
CyclicInheritance	
Method Resolution Order (MRO)	46
Head Element vsTail Terminology	46
How to find Merge?	46
Finding mro(P) by using C3 Algorithm	48
🚱 super() Method	51
How to Call Method of a Particular Super Class?	53
♦ Various Important Points about super()	53



	<b>58</b>
Polymorphism	59
Duck Typing Philosophy of Python	59
Overloading	
Operator Overloading	
Method Overloading	
ConstructorOverloading	
Overriding	68
Method Overriding	
Constructor Overriding	
<b> </b>	~71
Abstract Method	72
Abstract class	73
• Interface	76
Concreate class vs Abstract Class vs Inteface	78
Public, Private and Protected Members	78
_str_() Method	
Difference between str() and repr() functions	80
Small Banking Application	81
Second Exception Handling ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	v 83
Syntax Errors	
Runtime Errors	
Whatis Exception	85
Default Exception Handing in Python	85
Python's Exception Hierarchy	86
Customized Exception Handling by using try-except	
Control Flow in try-except	87
How to Print Exception Information	88
try with Multiple except Blocks	88
Single except Block that can handle Multiple Exceptions	90
Default except Block	90
finally Block	91
Control Flow in try-except-finally	93
Nested try-except-finally Blocks	94
Control Flow in nested try-except-finally	95



else Block with try-except-finally	96
Various possible Combinations of try-except-else-finally	97
Types of Exceptions	
Predefined Exceptions	
User Definded Exceptions	
How to Define and Raise Customized Exceptions	102
® File Handling ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	v~ 104
Types of Files	105
Text Files	
Binary Files	
	105
Closing a File	106
∀arious Properties of File Object	106
→ Writing Data to Text Files	107
🖱 write(str)	
writelines(list of lines)	
Reading Character Data from Text Files	108
riangle read() $ o$ To Read Total Data from the File	
$\stackrel{ riangle}{ riangle}$ read(n) $\rightarrow$ To Read 'n' Characters from the File	
readline() → To Read only one Line	
$\stackrel{ riangle}{ riangle}$ readlines() $\rightarrow$ To Read all Lines into a List	
The with Statement	109
The seek() and tell() Methods	
How to check a particular File exists OR not	111
Handling Binary Data	
Handling CSV Files	113
Writing Data to CSV File	
Reading Data from CSV File	
Zipping and Unzipping Files	
To Create Zip File	
Working with Directories	
Running Other Programs from Python Program	
How to get Information about a File	
Pickling and Unpickling of Objects	120



Multi Threading ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	23
	24
Process based Multi Tasking	
Thread based Multi Tasking	
The ways of Creating Thread in Python	125
Creating a Thread without using any class	
Creating a Thread by extending Thread class	
Creating a Thread without extending Thread class	
Setting and Getting Name of a Thread	127
Thread Identification Number (ident)	128
enumerate() Function	129
isAlive() Method	130
join() Method	130
Daemon Threads	32
Default Nature	133
igoplus  Synchronization	134
Cock	
RLock	
Semaphore	
Synchronization By using Lock Concept	135
Problem with Simple Lock	136
Demo Program for Synchronization by using RLock 1	137
$igoplus $ Difference between Lock and RLock ${}^{\prime}$	138
Synchronization by using Semaphore	138
Bounded Semaphore 1	140
Difference between Lock and Semaphore	140
Inter Thread Communication	141
Inter Thread Communication by using Event Objects	41
Methods of Event Class	141
<b>e</b> set()	
🖱 clear()	
🖱 isSet()	
wait()   wait(seconds)	
Inter Thread Communication by using Condition Object	143



	Methods of Condition
	acquire()
	release()
	wait() wait(time)
	notify()
	notifyAll()
	<b>⚠</b> Case Study
	Inter Tread Communication by using Queue
	Important Methods of Queue
	put()
	① Types of Queues
	FIFOQueue
	LIFO Queue
	PriorityQueue
	Good Programming Practices with usage of Locks148
֍ Pyt	hon Database Programming ~~~~~~~~~~~ 151
	♠ Storage Areas
	Temporary Storage Areas
	Permanent StorageAreas
	File Systems
	Databases
	Python Database Programming
	Working with Oracle Database
	(installing cx_Oracle
	How to Test Installation
	Working with MySQL Database
	Commonly used Commands in MySQL
	Driver/Connector Information
	How to Check Installation



<b>Solution</b> Regular Expres	sions & Web Scraping ~~~~~~~~ 166
_	Classes 168
•	I Character Classes
<u> </u>	
	Functions of Remodule
•	match()
,	fullmatch()
,	search()
,	findall()
,	finditer()
•	sub()
,	subn()
,	split()
•	compile()
Web Scrapin	g by using Regular Expressions
⊕ Decorator Func	tions ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~	ng183
<b> Sequence</b> Generator Fundamento	tions ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
•	of Generator Functions
Ξ -	vs Normal Collections wrt Performance
· ·	vs Normal Collections wrt Memory Utilization
	, , , , , , , , , , , , , , , , , , , ,
<b> </b>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Debugging F	Python Program by using assert Keyword
	ert Statements
<b>–</b> , , , , , , , , , , , , , , , , , , ,	Simple Version
_	Augmented Version
	landling vs Assertions



SPython Logging ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	v~~ <b>193</b>
Logging Levels	
How to implement Logging	194
How to configure Log File in over writing Mode	196
How to Format Log Messages	196
How to add Timestamp in the Log Messages	197
How to Change Date and Time Format	197
How to write Python Program Exceptions to the Log File	198
Problems with Root Logger	199
Need of Our Own Customized Logger	200
Advanced logging Module Features: Logger	200
Logger with Configuration File	203
Creation of Custom Logger	205
How to Create seperate Log File based on Caller	206
Advantages of Customized Logger	208