





INDEX

1) Language Funda	amentals 1
2) Operators	32
3) Flow Control	56
4) String Data Typ	e 72
5) List Data Struct	ure 98
6) Tuple Data Stru	cture 116
7) Set Data Structi	ure 124
8) Dictionary Data	Structure 131
9) Functions	
10) Modules	162
11) Packages	
12) 100 Pattern F	Programs 177







DETAILED INDEX

.•.	Total atta
	Introduction
***	Features of Python 4
	1) Simple and Easy to Learn
	2) Freeware and Open Source
	3) High Level Programming Language
	4) Platform Independent
	5) Portability
	6) Dynamically Typed
	7) Both Procedure Oriented and Object Oriented
	8) Interpreted
	9) Extensible
	10) Embedded
	11) Extensive Library
*	Limitations of Python 5
*	Flavors of Python 6
	1) CPython
	2) Jython OR JPython
	3) IronPython
	4) PyPy
	5) RubyPython
	6) AnacondaPython
*	Python Versions 6
*	Identifiers 7







*	DATA TYPES 10
	1) int Data Type
	Decimal Form
	Binary Form
	Octal Form
	Hexa Decimal Form
	2) Float Data Type
	3) Complex Data Type
	4) bool Data Type
	5) str Data Type
	6) bytes Data Type
	7) bytearray Data Type
	8) List Data Type
	9) Tuple Data Type
	10) Range Data Type
	11) Set Data Type
	12) frozenset Data Type
	13) dict Data Type
	14) None Data Type
*	Base Conversions 12
*	
·	
*	TYPE CASTING 18
	• int()
	• float()
	• complex()
	• bool()
	• str()
*	Fundamental Data Types vs Immutability 21
*	Escape Characters 31
*	Constants 31
2) OPER	ATORS 32
	1) Avithmentic Operators
	1) Arithmetic Operators
	2) Relational Operators OR Comparison Operators
	3) Equality Operators 36







4)	Logical Operators 37
5)	Bitwise Oeprators
- 7	Bitwise Complement Operator (~)
-	
6)	Shift Operators
	• << Left Shift Operator
	 >> Right Shift Operator
7)	Assignment operators 40
8)	Ternary Operator OR Conditional Operator 41
9)	Special operators 42
- ,	Identity Operators
	Membership operators
SA.	Operator Precedence 44
-	Mathematical Functions (math Module)45
	Command Line Arguments
_	Output Statements
	SONTROL 56
S	
	• if
	• if-elif
	• if-elif-else
S	> Iterative Statements 62
	• for
	• while
S.	Transfer Statements 66
	• break
	• continue
	• pass
(S	> Loops with else Block 68
S	del Statement 70
•	







\$	Difference between del and None 71
STRING	DATA TYPE
•	What is String?73
•	How to define multi-line String Literals? 73
•	How to Access Characters of a String? 74
	Accessing Characters By using Index
	Accessing Characters by using Slice Operator
•	Behaviour of Slice Operator 75
•	Slice Operator Case Study 76
③	Mathematical Operators for String 76
	len() in-built Function 77
•	Checking Membership 78
•	Comparison of Strings 78
•	Removing Spaces from the String
•	Finding Substrings 79
\odot	Counting substring in the given String 81
•	Replacing a String with another String 82
•	Splitting of Strings 83
\odot	Joining of Strings 83
•	Changing Case of a String 84
•	Checking Starting and Ending Part of the String
•	To Check Type of Characters Present in a String 85
③	Formatting the Strings 86







⊙ lmį	ortant Programs re	garding String Concept 87
	Program t	o Reverse the given String
	2) Program t	o Reverse Order of Words
	3) Program t	o Reverse Internal Content of each Word
	4) Program t	o Print Characters at Odd Position and Even Position
	for the giv	ven String
		o Merge Characters of 2 Strings into a Single String by aracters alternatively
	6) Program t	o Sort the Characters of the String and First Alphabet ollowed by Numeric Values
	•	or the following Requirement (Input: a4b3c2, Output:
		o perform the following Activity (Input: a4k3b2,
	=	o Remove Duplicate Characters from the given Input
	10) Program t	to find the Number of Occurrences of each Character
	present ir	the given String
	11) Program t	to perform the following Task
	•	Input: 'one two three four five six seven'
	•	Output: 'one owt three ruof five xis seven'
		92
⊙ Creat	ion of List Objects	99
Acces	ssing Elements of Lis	t 100
	 By using Index 	ex
	By using Slic	e Operator
List v	s Mutability	
Trave	_	of List 102
	 By using whi 	•
	 By using for 	•
	• •	nly Even Numbers
	 To display El 	ements by Index wise







\odot	Important Functions of List 104
	To get Information about List
	• len()
	• count()
	• index()
	Manipulating Elements of List
	append()
	• insert()
	• extend()
	• remove()
	• pop()
	Ordering Elements of List
	• reverse()
	• sort()
•	Using Mathematical Operators for List Objects 111
	 Concatenation Operator (+)
	Repetition Operator (*)
•	Comparing List Objects
③	Membership Operators 112
	• in Operator
	• not in Operator
③	clear() Function 112
③	Nested Lists 113
•	Nested List as Matrix 113
③	List Comprehensions 114







6) TUPLE DATA STRUCTURE 116		
① Tuple Creation 118		
 Accessing Elements of Tuple By using Index By using Slice Operator 		
Tuple vs Immutability 119		
 Mathematical Operators for Tuple		
 Important Functions of Tuple		
Tuple Packing and Unpacking 121		
③ Tuple Comprehension 122		
Differences between List and Tuple 123		
7) SET DATA STRUCTURE 124		
© Creation of Set Objects 125		
 Important Functions of Set		







•	Mathematical Operations on the Set 128	
	• union()	
	intersection()	
	difference()	
	symmetric_difference()	
•	Membership Operators: (in, not in) 129	
③	Set Comprehension 129	
8) DICTION	ARY DATA STRUCTURE13	31
•	How to Create Dictionary? 132	
•	How to Access Data from the Dictionary? 132	
•	How to Update Dictionaries? 134	
•	How to Delete Elements from Dictionary? 134 • del d[key]	
	• d.clear()	
	• del d	
•	Important Functions of Dictionary 135	
	• dict()	
	• len()	
	• clear()	
	• get()	
	• pop()	
	popitem()	
	• keys()	
	• values()	
	• items()	
	• copy()	
	• setdefault()	
	• update()	
•	Dictionary Comprehension 141	







9) FUNCTI	ONS 142
•	Built in Functions 143
•	User Defined Functions 143
•	Parameters 144
•	Return Statement 144
•	Returning Multiple Values from a Function 146
•	Types of Arguments 147
	Positional Arguments
	Keyword Arguments
	Default Arguments
	Variable Length Arguments
•	Case Study 151
•	Types of Variables 152
	Global Variables
	Local Variables
•	global Keyword 153
•	Recursive Functions 154
•	Anonymous Functions 155
•	Normal Function 155
•	Lambda Function 155
•	filter() Function 156
•	map() Function 156
•	reduce() Function 158
•	Everything is an Object 159
	Function Aliasing 159
•	-







10)	MODULES 162
	Renaming a Module at the time of import (Module Aliasing) 164
	Various Possibilties of import 164
	• Member Aliasing 165
	Reloading a Module 165
	Finding Members of Module by using dir() Function 166
	The Special Variablename 168
	Working with math Module 169
	Working with random Module 169
	random() Function
	randint() Function
	uniform() Function
	randrange ([start], stop, [step])
	• choice() Function
11)	PACKAGES 173
12)	100 PATTERN PROGRAMS 177