1 Python CheatSheet

LANGUAGES

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1.1 Python Compact Coding

Name	Comment
if return	if $k == 0$: return False
if continue	if index == icol: continue
return if else	return val if i>0 else 0
multiple assignment	1, $r = 2$, 3
assign with check of none	a = b if b else 1
assignments	1[1]=1[0]=0
swap values	left, right = right, left
list Comprehensions	[x*x for x in range(1, 1001)]
list Comprehensions	1 = [2, 3, 5]; [2*x for x in 1 if x>2]
use zip	for a, b in zip(nums, nums[3:])
build a list	dp = [1] + [0]*3
sum a subarray	sum(nums[0:k])
sort list in descending order	sorted(nums, reverse=True)
dictionary with defaults	<pre>m = collections.defaultdict(lambda: 1)</pre>
loop with single statement	<pre>while p.left: p = p.left</pre>
print multiple values	<pre>print(x, y)</pre>
get both index and item	<pre>for i, ch in enumerate(["a", "b", "c"]): print(i, ch)</pre>
mod negative	(-2)%5

1.2 Python Common Algorithms

Name	Comment
bfs	code/tree-bfs.py
trie tree	code/tree-trie.py

1.3 List

Name	Comment
return all but last	list[:-1]
The second last item	list[-2] or list[~1]
map	map(lambda x: str(x), [1, 2, 3])
create fixed size array	1 = [None] * 5
insert elements to head	array.insert(0,var)
delete element by index	del a[1]
list as stack	<pre>item = 1.pop()</pre>
sort in descending	l = sorted([8, 2, 5], reverse=True)
sort by attribute	l=sorted([('ebb',12),('abc',14)], key=lambda x: x[1])
in-place sort	1.sort()
generate a-z	<pre>map(chr, range(ord('a'), ord('z')+1))</pre>
$\mathrm{map/reduce}$	<pre>functools.reduce((lambda x, y: "%s %s" % (x, y)), 1)</pre>
replace ith to jth	<pre>list[i:j] = otherlist</pre>
combine two list	list1 + list2
get sum	<pre>sum(list)</pre>
unique list	set(["Blah", "foo", "foo", 1, 1, 2, 3])
Insert to sorted list	<pre>bisect.insort(1, 3)</pre>
Reverse a list	1[::-1]

1.4 String

Name	Comment
reverse string	'hello world'[::-1]
array to string	' '.join(['a', 'b'])
split string to array	"hello, python".split(",")
string to array	<pre>list('abc')</pre>
format to 2 digits	print "%02d" % (13)
find location of substring	abc'.find(d') = (returns -1)
find location of substring	'abc'.index('d')= (raise exception)
capitalize string	'hello world'.capitalize()
upper/lower string	'aBc'.upper()=, 'aBc'.lower()
count substring	'2-5g-3-J'.count('-')
replace string	'ab cd'.replace(' ', ")
padd whitespace to the left	'a'.ljust(10, ' ')
padd whitespace to the right	'a'.rjust(10, ' ')
pad leading zero	'101'.zfill(10)
string remove tailing '0'	'0023'.rstrip('0')
string remove leading '0'	'0023'.lstrip('0')
check if string represent integer	'123'.isdigit()
check if string alphabetic	'aBc'.isalpha()
Check if string alphanumeric	'a1b'.isalnum()

1.5 Integer

Name	Comment
max, min	sys.maxsize, -sys.maxsize-1
min, max	min(2, 3), max(5, 6, 2)
generate range	for num in range(10,20)
get ascii	ord('a'), chr(97)
print integer in binary	"{0:b}".format(10)

1.6 Dict & Set

Name	Comment
dict get first element	m[m.keys()[0]]
intersection	<pre>list(set(11).intersection(set(12)))</pre>
list to set	set(list1)
remove from set	s.remove(2)
remove the first from set	s.pop()
sort dict by values	<pre>sorted(dict1, key=dict1.get)</pre>
deep copy dict	<pre>import copy; m2=copy.deepcopy(m1)</pre>

1.7 Bit Operator

Name	Comment
mod	x % 2
shift left	\mathtt{x} « 1 ; a « $2=$
shift righ	x » 2
and	x & y
complement	~X
xor	x ^ y
power	2 ** 3
bool complement	not x
binary format	bin(5) (get 101)
count 1 inside binary	bin(5).count('1')

1.8 File

Name	Comment
Append file	<pre>open("/tmp/test.txt", "ab").write("\ntest:")</pre>
Write file	<pre>open("/tmp/test.txt", "wab").write("\ntest:")</pre>
Read files	<pre>f.readlines()</pre>
Check file	os.path.exists("/tmp/test.txt")

1.9 Math

Name	Comment	
sqrt	<pre>import math; math.sqrt(5)</pre>	
power	<pre>import math; math.pow(2, 3)</pre>	
random	random.randint(1, 10) 1 and 10 included	
eval string	eval("2-11*2")	

1.10 Networking

Name	Comment
Start a simple HTTP server	<pre>pvthon -m SimpleHTTPServer <port number=""></port></pre>

1.11 Queue/heapq

Name	Comment
Initialize min heap	heapq.heapify(q)
heappush a tuple	q[]; heapq.heappush(q, (5, 'ab')) =
pop	<pre>print (heapq.heappop(q))</pre>
first item	q[0]
print heapq	<pre>print list(q)</pre>
create a queue	<pre>from collections import deque; queue = deque([1,5,8,9])</pre>
append queue	queue.append(7)
pop queue from head	<pre>element = queue.popleft()</pre>

Review: Heap Problems

Link: BINARY HEAP AND HEAPQ IN PYTHON

1.11.1 minheap & maxheap

```
import heapq
# initializing list
li = [5, 7, 9, 1, 3]
# using heapify to convert list into heap
heapq.heapify(li) # a minheap
heapq._heapify_max(li) # for a maxheap!
# printing created heap
print (list(li))
# using heappush() to push elements into heap
# pushes 4
heapq.heappush(li,4)
# printing modified heap
print (list(li))
# using heappop() to pop smallest element
print (heapq.heappop(li))
print (list(li))
```

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1.12 Code snippets

• Initialize Linkedlist from array def initListNodeFromArray(self, nums): head = ListNode(None) prev, p = head, head for num in nums: pre = pp.val = num q = ListNode(None) p.next = qp = p.nextpre.next = None return head • Print linkedlist def printListNode(self, head): print("printListnode") while head: print("%d" % (head.val)) head = head.next • Print Trie Tree in level order def printTrieTreeLevelOrder(self, node): print("printTrieTreeLevelOrder") if node.is_word: print("Node is a word") queue = [] queue.append(node) while len(queue) != 0: s = '' for i in range(len(queue)): node = queue[0] del queue[0] for child_key in node.children: $s = \%s \%s, \% (s, child_key)$ queue.append(node.children[child_key]) if s != '': print 'print level children: %s' % (s) • python sort with customized cmp function: -1 first nums = [3, 2, 6]def myCompare(v1, v2): return -1 sorted_nums = sorted(nums, cmp=myCompare) print nums # [3, 2, 6] print sorted_nums # [6, 3, 2] • Initialize m*n matrix col_count, row_count = 3, 2 matrix = [[None for j in range(col_count)] for i in range(row_count)] print matrix

1.13 More Resources

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