Language Fundamentals

Character set of python

Set of characters supported by python language for writing programs. Python is a universal language, it support characters in English and other languages.

1. A-Z (Uppercase), a-z (lowercase) English
2. Characters of other languages (Hindi, Telugu, Tamil, Urdu,…)
3. Digits (0-9)
4. Special characters

```
>>> a=10
>>> a
10
>>> ए=200
>>> ए
200
>>> rollno=5
>>> rollno
5
>>> नम="नरश"
>>> नम
'नरश'
>>> ౨=400
>>> ౨
400
>>> name="నరష"
>>> name
'నరష'
```

There are two encoding and decoding standards (OR) two types of character set
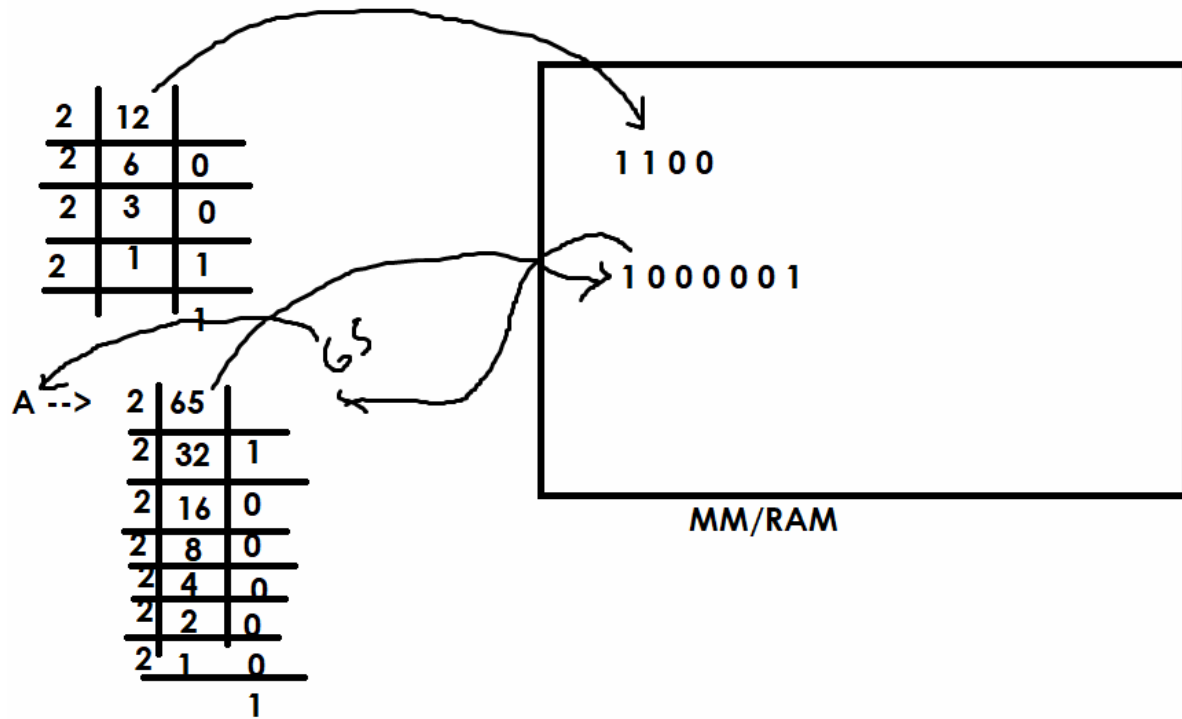1. ASCII

2. UNICODE

ASCII stands for American standard code for information interchange, ASCII standard support 256 characters (0-255). ASCII is developed by ANSI (American National Standard Institute)

ASCII support,
1. Alphabets in English (A-Z,a-z)
2. Digits (0-9)
3. Special characters

ASCII TABLE

Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char
0	0	[NULL]	32	20	[SPACE]	64	40	@	96	60	`
1	1	[START OF HEADING]	33	21	!	65	41	A	97	61	a
2	2	[START OF TEXT]	34	22	"	66	42	B	98	62	b
3	3	[END OF TEXT]	35	23	#	67	43	C	99	63	c
4	4	[END OF TRANSMISSION]	36	24	$	68	44	D	100	64	d
5	5	[ENQUIRY]	37	25	%	69	45	E	101	65	e
6	6	[ACKNOWLEDGE]	38	26	&	70	46	F	102	66	f
7	7	[BELL]	39	27	'	71	47	G	103	67	g
8	8	[BACKSPACE]	40	28	(	72	48	H	104	68	h
9	9	[HORIZONTAL TAB]	41	29	)	73	49	I	105	69	i
10	A	[LINE FEED]	42	2A	*	74	4A	J	106	6A	j
11	B	[VERTICAL TAB]	43	2B	+	75	4B	K	107	6B	k
12	C	[FORM FEED]	44	2C	,	76	4C	L	108	6C	l
13	D	[CARRIAGE RETURN]	45	2D	-	77	4D	M	109	6D	m
14	E	[SHIFT OUT]	46	2E	.	78	4E	N	110	6E	n
15	F	[SHIFT IN]	47	2F	/	79	4F	O	111	6F	o
16	10	[DATA LINK ESCAPE]	48	30	0	80	50	P	112	70	p
17	11	[DEVICE CONTROL 1]	49	31	1	81	51	Q	113	71	q
18	12	[DEVICE CONTROL 2]	50	32	2	82	52	R	114	72	r
19	13	[DEVICE CONTROL 3]	51	33	3	83	53	S	115	73	s
20	14	[DEVICE CONTROL 4]	52	34	4	84	54	T	116	74	t
21	15	[NEGATIVE ACKNOWLEDGE]	53	35	5	85	55	U	117	75	u
22	16	[SYNCHRONOUS IDLE]	54	36	6	86	56	V	118	76	v
23	17	[END OF TRANS. BLOCK]	55	37	7	87	57	W	119	77	w
24	18	[CANCEL]	56	38	8	88	58	X	120	78	x
25	19	[END OF MEDIUM]	57	39	9	89	59	Y	121	79	y
26	1A	[SUBSTITUTE]	58	3A	:	90	5A	Z	122	7A	z
27	1B	[ESCAPE]	59	3B	;	91	5B	[	123	7B	{
28	1C	[FILE SEPARATOR]	60	3C	<	92	5C	\	124	7C		
29	1D	[GROUP SEPARATOR]	61	3D	=	93	5D	]	125	7D	}
30	1E	[RECORD SEPARATOR]	62	3E	>	94	5E	^	126	7E	~
31	1F	[UNIT SEPARATOR]	63	3F	?	95	5F	_	127	7F	[DEL]

```
2 | 12
2 | 6   0
2 | 3   0
2 | 1   1
      1
```

```
1 1 0 0
```

```
A -->  2 | 65
       2 | 32   1
       2 | 16   0
       2 | 8    0
       2 | 4    0
       2 | 2    0
       2 | 1    0
            1
```

```
1 0 0 0 0 0 1
```

MM/RAM

UNICODE

As of Unicode version 16.0, there are 155,063 characters with code points.

```
IDLE Shell 3.12.6
File  Edit  Shell  Debug  Options  Window  Help
>>> नम="नरश"
>>> नम
    'नरश'
>>> వ=400
>>> వ
    400
>>> name="నరష"
>>> name
    'నరష'
>>> x='😒'
>>> x
    '😒'
>>> y='😆'
>>> y
    '😆'
>>> message="🙏"
>>> message
    '🙏'
>>>
```

UNICODE is super set of ASCII, UNICODE support characters in English and also support characters from other languages.

Tokens of python

What is Token?
A token is smallest individual unit within program is called token.
Without tokens we cannot write instruction or statement.

1. Keywords
2. Identifiers
3. Literals
4. Data types
5. Operators

Keywords or reserved words

Python language related words are called keywords
The meaning of these words reserved by translators (OR) meaning of
these words understand by python translator.
Every word having special syntax and used for specific purpose

How to find keyword list in python?

>>> import keyword
>>> keyword.kwlist
['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await', 'break', 'class',
'continue', 'def', 'del', 'elif', 'else', 'except', 'finally', 'for', 'from', 'global', 'if',
'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or', 'pass', 'raise', 'return', 'try',
'while', 'with', 'yield']

Python 3.13 support 35 keywords

Keywords belongs to values
1. True
2. False
3. None
Keywords belongs to control statements
1. If
2. Else
3. Elif
4. While

5. For
6. Break
7. Continue
8. Return
9. Pass

Keywords belongs to functions

1. def
2. lambda
3. gobal
4. nonlocal
5. yield

Keywords belongs to exception handling

1. try
2. except
3. finally
4. raise
5. assert
6. with

Keywords belongs modules and packages

1. import
2. from
3. as

Keywords belongs to operators

1. and
2. or
3. not
4. in
5. is
6. del

Keywords belongs to classes

1. class

Keywords belongs to multithreading

1. async
2. await

Identifiers

Identifier is a user defined word, which is used to identify programming elements.

1. Variable name
2. Function name
3. Data type name
4. Program name/module name
5. Package name
6. Constant name