

DSA Python

MAY

30

TUESDAY

Dasahara / Mansha Puja

१० ज्येष्ठ शुक्ल मंगलवार २०८०
दशमी घो १०/१५
Hizri - १० Zilkad 1444
३० मई २०२३
Sunrise - 4.54 A.M.

१५ जैष्ठ मंगलवार १४३०
दशमी घो १०/१५
Saka - ९ Jaiṣṭha 1945
अहम - १५ जैष्ठ १४३०
Sunset - 6.12 P.M.

Literal → A literal is a fixed value that is embedded directly in source. Literal are used to represent data. Such as number, string and booleans. They can also be used to represent complex data structures such as lists and dictionaries.

Types There are many type of literals in python, but some of the most common include →

- ✓ Numerical literal
- ✓ String literal
- ✓ Boolean literal
- ✓ Special literal (None)

*String Literal →

It is a sequence of character's surrounded by single or double code.

Example → 'Hello world!'
"Hello world!"

*Escape Sequence →

Escape Sequence have in building the non-graphic character (those that directly not print from the keyboard). They can be represented using the back slash \ followed as escape sequence.

May	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W
2023 =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

MAY	31	WEDNESDAY
Sunrise - 4.54 A.M.		Sunset - 6.12 P.M.
11 जैष्ट शुक्रवार २०८० एकादशी घो ११/९ Hizri - 11 Zilkad 1444 ३१ मई २०२३		
1800 २०/१२ १५ जैष्ट १४५ १८०० - ६.१२ P.M.		
be deleted newspaper leads + culture in python		
Some popular escape sequence		
Sequence		meaning
i) \n	→	newline
\t	→	-tab-
\\"	→	"
\'	→	'
\\\	→	\\
Other Single line and multiple strings :-		
* Single line string are represented by in the single and double quote.		
Ex → My string → "Hello world!" / "Hello world!"		
The multiple string can be present using triple quote.		
Ex → My string → """Hello world my name is !!"		
Boolean literal :- It is represent True or False.		
True corresponds to the value 1 while False corresponds to the value 0.		
T W 30 31	S M T W T F S S M T W T F S S M T W T F S S M T W T F S Jun	
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 = 2023		

১২ জ্যৈষ্ঠ শুক্ল গুরুবার ২০৮০

দ্বাদশী ঘঃ ১১/১৬

Hizri - 12 Zilkad 1444

৫ জুন ২০২৩

Sunrise - 4.54 A.M.

JUNE

01

THURSDAY

১৭ জ্যোষ্ঠ বৃহস্পতিবার ১৪৩০

দ্বাদশী ঘঃ ১১/১৬

Saka - 11 Jaiṣṭha 1945

অহম - ১৭ জ্যোষ্ঠ ১৪৩০

Sunset - 6.13 P.M.

Special Literal :> The None (literal) (Special literal) is used to indicate the absence of a value, it is used to indicate the end of a list in python.

Operations

i) Unary Operator →

- 1) Unary minus (-)
- 2) Unary plus (+)
- 3) Bitwise not operator (~)
- 4) Identity operator (is)
- 5) Type operator (type)

Imp!

ii) Binary Operator → Arithmetic Operators

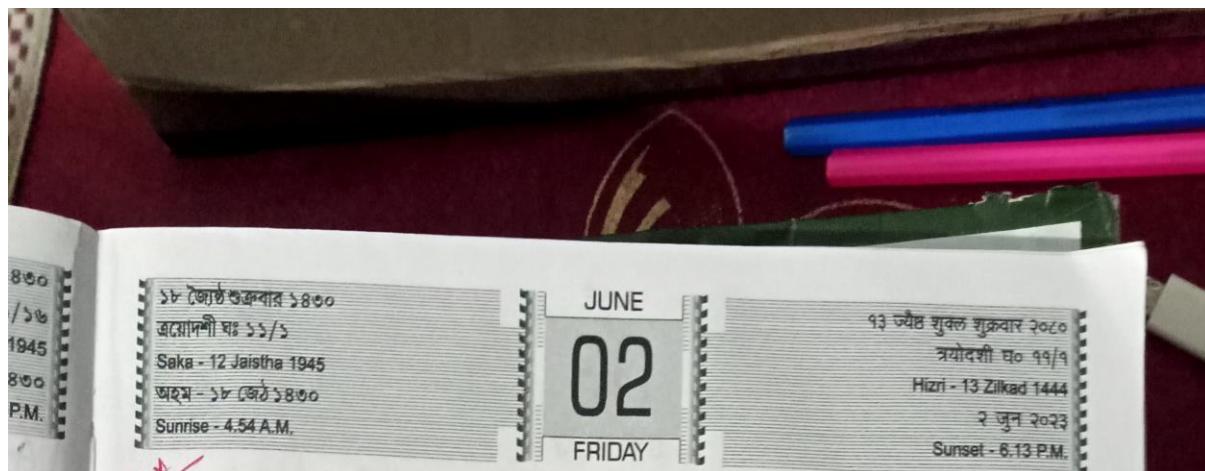
- 1) Exponent → $\times \times$
- 2) Float / Integer → //

operator

iii) Bitwise Operator →

- 1) Bitwise AND (&&) (&)
- 2) " OR (|)
- 3) " NOT (!)
- 4) " XOR (^)
- 5) " Left shift (<<)
- 6) " Right shift (>>)

Jun	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
2023 =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24



~~a)~~ Identity operation \rightarrow In python its the 'is' operator

- \rightarrow $a \rightarrow$ is the identity same,
- \rightarrow $a \neq \rightarrow$ is the identity not same,

$$\boxed{\text{value } \rightarrow = (\text{id})}$$

~~c)~~ Relational operator \rightarrow

$> \rightarrow GT$	$> = GET$
$< \rightarrow LT$	$< = LET$
$= \rightarrow Equal$	
$\neq \rightarrow \text{not Equal}$	

~~d)~~ Logical operators \rightarrow

- \rightarrow Logical AND \rightarrow (and) $(b) a \text{ and } b$
- \rightarrow Logical OR \rightarrow (or) $a \text{ or } b$
- \rightarrow Logical Not \rightarrow (not)

~~g)~~ Assigned operator \rightarrow

variable = Expression

Cascade assign

$$x = y = z$$

Compound assign

$$\begin{array}{|c|} \hline + = \\ \hline - = \\ \hline / = \\ \hline \% = \\ \hline \end{array}$$

S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	S	M	JUL	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	2023

१४ जैष शुक्र रात्रिवार २०८०
सतुर्दशी शुक्र १०/१६
Hizri - 14 Zilkad 1444
३ जून २०२३
Sunrise - 4:54 A.M.

JUNE
03
SATURDAY
Loknath Baba Tirodhān Dibas

१५ जैष शनिवार १४७०
सतुर्दशी शुक्र १०/१६
Saka - 13 Jaistha 1945
अहम - १५ जैष १४७०
Sunset - 8:13 P.M.

Membership operator → The membership operator in Python
i) In
ii) not in

i) In → whether the variable is in the sequence

ii) not in → whether the variable is not in the sequence

Expression.

{ Expression = operand operand & operator }

$a+b$ → Expression.
Operand Operator

Statement -

A Statement is a programming instruction that performs some function.

A statement after execution may and may not result in value.

Jun	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
2023	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

२० जैष्ठ रविवार १४३०
पूर्णिमा घो ९/५
Saka - 14 Jaistha 1945
अहम - २० जैष्ठ १४३०
Sunrise - 4.54 A.M.

JUNE
04
SUNDAY
Jaganathdeb Sananjatra

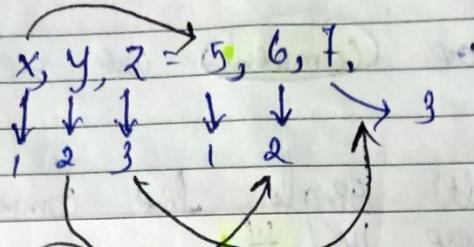
१५ जैष्ठ शुक्ल रविवार २०८०
पूर्णिमा घो १/५
Hizri - 15 Zilkad 1444
४ जून २०२३
Sunset - 6.14 P.M.

१ आषाढ कृष्ण सोमवार २०८०
प्रतिपद घ० ७/२९
Hizri - 16 Zilkad 1444
५ जून २०२३
Sunrise - 4.54 A.M.

JUNE
05
MONDAY

२१ जैष्ठ सोमवार १४३०
प्रतिपद घ० १/२९
Saka - 15 Jaistha 1945
अहम - २१ जैष्ठ १४३०
Sunset - 6.14 P.M.

1) different values to different variable



* Swapping →

$$x, y = y, x$$

$[x = 10]$
print(x)

i) $x = 10$

print(n)

ii) $x = 'BCA'$

print(x)

iii) $x = 2.54$

print(x)

↳ all allow

Dynamic
program

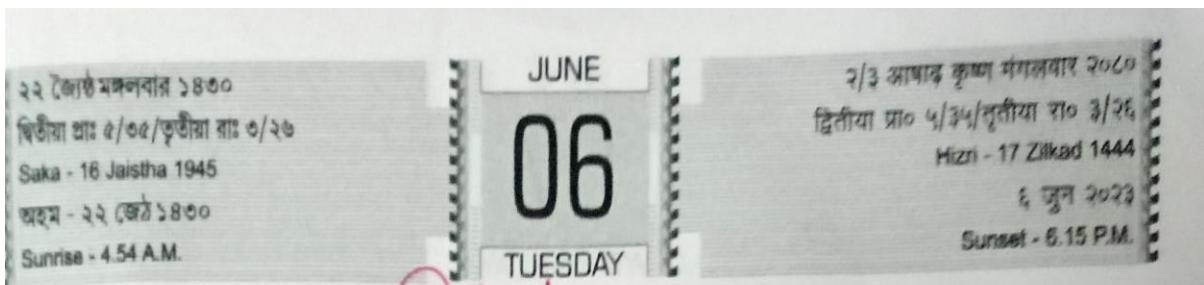
name = input ("Enter name")

print ("Hello", name)

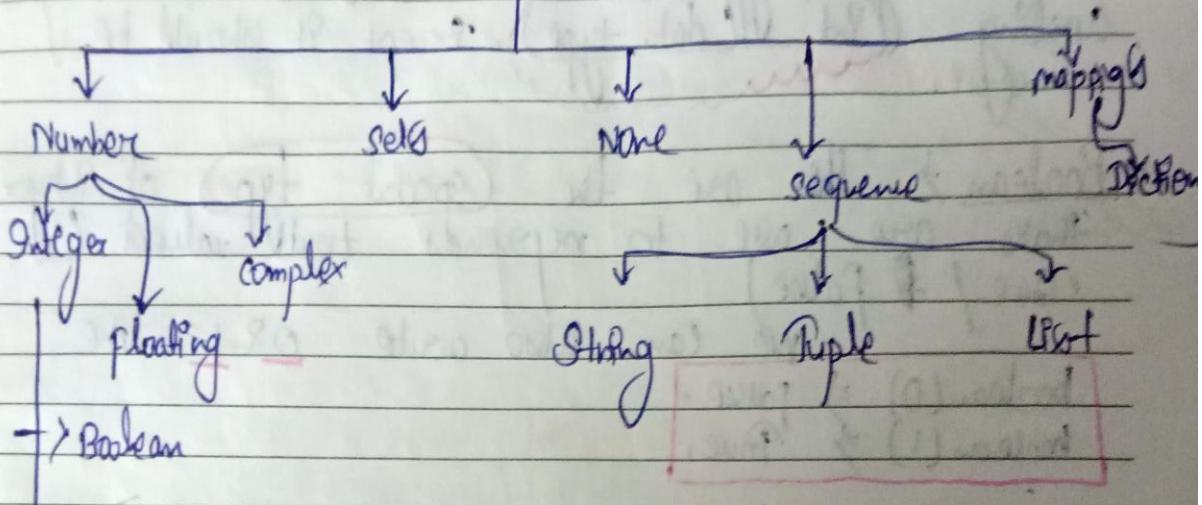
→ Convert centigrade to fahrenheit,

→ On swapping, ↳
↳ all allow of 2 values to interchange

Jun	T	F	S	S	M	T	W	T	F	S	S	M	T	W	F	S	S	M	T	W	F	S
2023=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22



Data type ↴



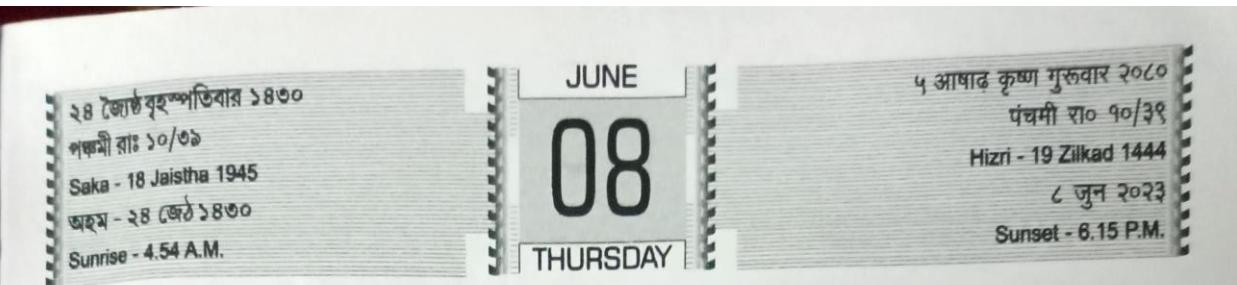
Numbers ↴ Numbers are the datatype that we use to store numeric values. The numbers may be 4 types →

- i) Integer ✓
- ii) floating ✓
- iii) complex ✓
- iv) boolean. ✓

1) Integer ↴ are the whole numbers without any decimal point. In Python, there no limit the length of the integer except it is limited by the amount of memory available.

In Integer may be signed or unsigned (positive or negative)

S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	JUL													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31



Q) Add two numbers, different face number product division

`a>b = 9int ("Input ("Enter the number")")`

$$\text{Sum} = a + b$$

$$\text{diff} = a - b$$

$$\text{Prod} = a * b$$

$$\text{mod} = a \% b$$

α/β float.

point ["Sum = ", sum]

Mutability

$$\begin{bmatrix} 2 & 4 & 9 & 7 & 8 \\ 0 & 1 & 2 & 3 & 4 \end{bmatrix}$$

* Mutable and Immutable Types :-

Categories - Python data types can be divided into two

(1) **Mutable**: / **Changeable**

5) Mutants: / changeable
6) Transferrable / inherit

(1) Immutable. / not changeable.

* Immutable types: →

The Immutable types are those, that can never change their values in place. In python following built-in types are immutable.

- (1) integer
 - (2) float
 - (3) boolean
 - (1) string
 - (2) tuples

S	S	M	T	W	F	S	S	M	T	W	F	S	S	M	T	W	F	S	S	M	JUL	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	-2023

মাধাদ কৃষ্ণ শুক্রবার ২০৮০
বী. রাত ১০/৩৯
জি. - ২০ Zilkad 1444
জুন ২০২৩
Sunrise - 4.54 A.M.

JUNE

09

FRIDAY

২৫ জ্যৈষ্ঠ শুক্রবার ১৪৩০
বঙ্গী রাত ৪/১০
Saka - 19 Jaistha 1945
অহম - ২৫ জেট ১৪৩০
Sunset - 6.16 P.M.

Mutability → Mutability means In the same memory address, new values can be stored as & when required.

Collection Datatype

[String]

Python strings is a sequence of characters. It can be individually access using its index. The index support both (forward) and (backward) movement. Every character is stored as unique code (-1 English character).

0 1 2 3 4 5
x = P Y T H O N
-6 -5 -4 -3 -2 -1
← backward

x[0]

LIST

* List is similar to string but they are mutable.

✓ [] → list / String / tuple / set.

my list = [1, X, 32, Hello]

Jun	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
2023	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

२६ जैष्ठ शनिवार १४३० संतुष्टी अंड ५/८० Saka - २० Jaistha 1945 अहम - २६ जैष्ठ १४३० Sunrise - 4.54 A.M.	JUNE 10 SATURDAY	७ आषाढ कृष्ण शनिवार २०६० समनी अ० ४/८४ Hizri - २१ Zilkad 1444 ९० जून २०२३ Sunset - 6.16 P.M.																																																
<p>my list [०] = ५०</p> <p>my list [३][१] = 'a'</p> <p>String can contain only characters</p> <p>String is immutable</p> <p>All</p>	<p><u>List</u></p> <ul style="list-style-type: none"> ↳ List can contain ↳ contain character & number ↳ List is mutable. 	<p><u>Tuple</u></p> <p>Tuples are similar to its which are immutable that is not be modifiable.</p> <p>mytuple = (1'a', 3, 'Hello')</p>																																																
<p><u>Set</u></p> <p>Sets are similar to list that can store multiple value. however the following are the difference list and set are -</p>	<p><u>Set</u></p> <p>↳ Sets are enclosed in {}.</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <th>S</th><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th><th>S</th><th>M</th> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td> </tr> </table> <p>JULY 2023</p>	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M																																		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31																				

८ आषाढ कृष्ण रविवार २०८०
आष्टी घो ३/२९
Hizri - 22 Zilkad 1444
११ जून २०२३
Sunrise - 4.54 A.M.

JUNE
11
SUNDAY

२७ जैषं त्रिविवार १४५०
आष्टी घो ५/२९
Saka - 21 Jaistha 1945
अहम - २७ जैषं १४५०
Sunset - 6.17 P.M.

२८ जैषं
नवमी घो ६/२९
Saka - 22
अहम -
Sunrise

- i) sets are unordered and unindexed,
- ii) set don't allow duplicate elements.
- iii) sets cannot contain mutable elements.

my list = [1, 'a', 5]

my set = { 1, mylist, 6, 7 }

Method name

ceil()

Purpose

Upgrade to the
nearest upper
integer

Syntax

math.ceil(2.3)
= 3

floor()

downgrade to the
nearest lower
integer

math.floor(2.3)
= 2

sqrt()

returns square of
number.

math.sqrt(9)
= 3

fabs()

return absolute
value sign is
None.

math.fabs(-5.0)
= 5

pow(base, exp)

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2023 =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

आषाढ कृष्ण मंगलवार २०८०
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१३ जुन २०२३
Sunrise - 4.54 A.M.

JUNE

13

TUESDAY

२९ जैष्ठ मंगलवार १४३०
दशमी घो ११/३८
Saka - 23 Jaistha 1945
अहम - २९ जैष्ठ १४३०
Sunset - 6.17 P.M.

on flow control / Conditional Statement ~

flow control statement

- 1) Simple statement
- 2) compound
- 3) Entity Statement

if (num % 2 == 0):
 do nothing / pass.

else

Print ("Odd"):

A conditional statement is a set of statement that are executed on the basis of condition. It can be a sequence, selection or loop.

↳ iteration

1) Compound Statement ↗

A compound statement represent a group of Statement executed as a single box. The conditions and loop are example of compound Statement. In python the following holds for all compound statement

1. The statements are not written in the same column as the control statement!

2) Every control statement must end with a colon, (:))

Jun	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
2023 =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

३० जैष्ठ वृद्धिवार १४३०
एकादशी घं १०/१३
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अहम - ३० जैष्ठ १४३०
Sunrise - 4.54 A.M.

JUNE
14
WEDNESDAY

११ आषाढ कृष्ण तुधवार २०८०
एकादशी घं १०/१३
Hizri - 25 Zilkad 1444
१४ जुन २०२३
Sunset - 6.18 P.M.

$$\begin{array}{|c|c|c|c|c|} \hline g & f & a & = & b \\ \hline e & l & , & e & \\ \hline \end{array} \rightarrow \text{intended & compact.}$$

2) Simple statement \rightarrow any single executable is a simple statement in python.

[Every statement \rightarrow single statement]

3) Empty statement \rightarrow An empty statement that does nothing! In python the empty statement is represented using the keyword pass.

Branch Statement

Simple if \rightarrow

A Simple if Statement test a particular condition. If the condition is true the statements under the if are executed.

Syntax \rightarrow if condition:

True block

S	S	M	T	W	T	F	S	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

१२ आषाढ कृष्ण गुरुदार २०८०
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Hizri - 26 Zilkad 1444
१५ जून २०२३
Sunrise - 4.54 A.M.

JUNE
15
THURSDAY

०१ जैस्त शुक्रवार १४५०
शाहनी शुक्र १५/११
Saka - 25 Jaistha 1945
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Sunset - 6.18 P.M.

Example → if $x > 0$:
print ("positive number")

if-else → The if-else condition is executed if the alternative statement to be executed if the condition is false.

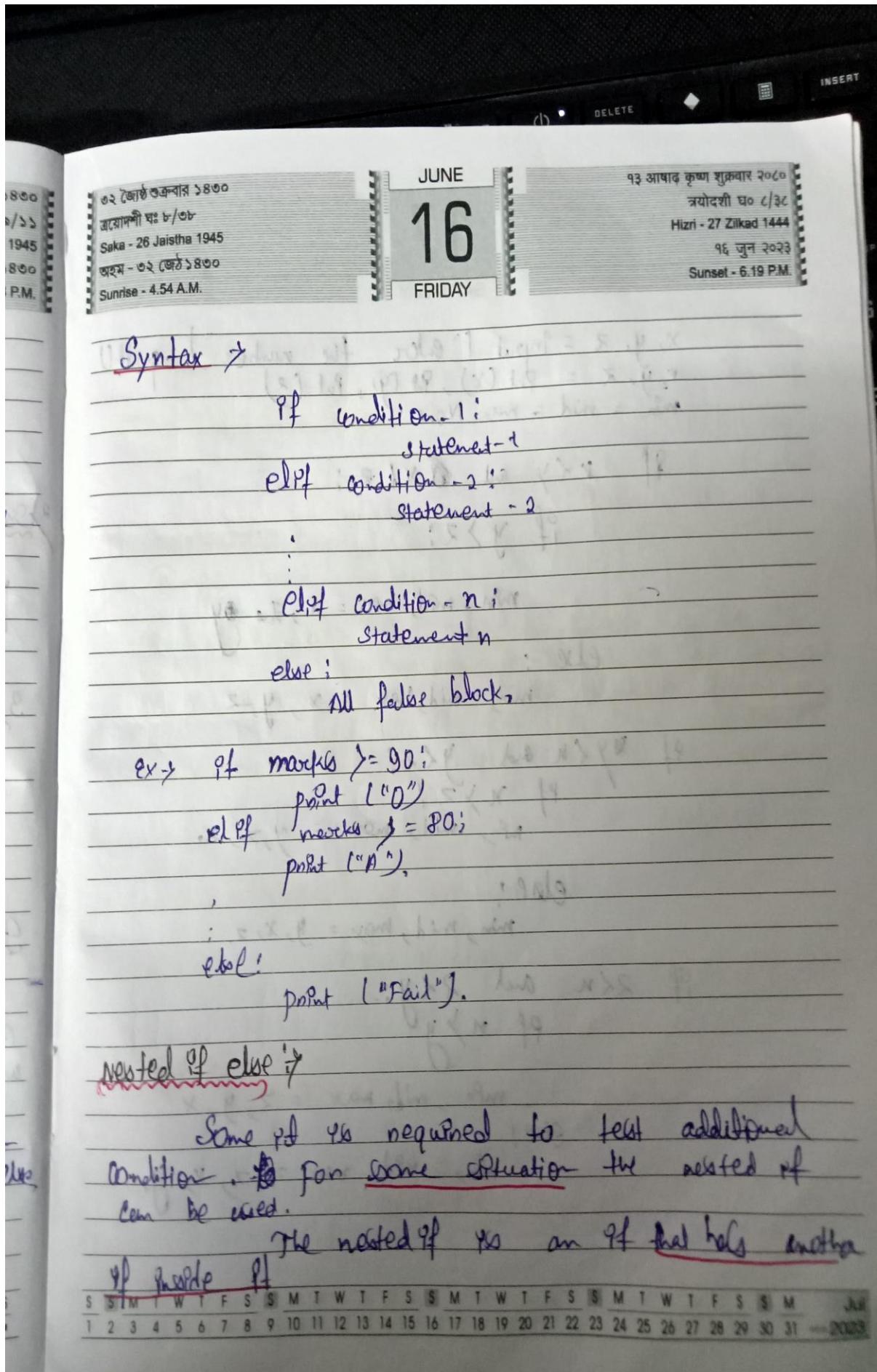
Syntax → if (condition):
 True block
else:
 False block.

Example → if num % 2 == 0 :
 print ("even").
else:
 print ("odd").

if-elif-else → It is some time required to test multiple conditions among which only one is true.

This multiway decision making is done using if-elif-else.

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১৪ আশাদ কৃষ্ণ শনিবাৰ ২০৮০
চতুর্দশী ঘো ৮/৩৪
Hizri - 28 Zilkad 1444
৭৭ জুন ২০২৩
Sunrise - 4:54 A.M.

JUNE
17
SATURDAY

১ আগাম শনিবাৰ ১৪৩৬
চতুর্দশী ঘো ৮/৩৪
Saka - 27 Jaistha 1945
অহম - ১ আহাৰ ১৪৩৬
Sunset - 6:19 P.M.

$x, y, z = \text{input} (" \text{enter the number} ")$, split
 $x, y, z = \text{int}(x), \text{int}(y), \text{int}(z)$
 $\min = \text{mid} = \max = \text{None}$

if $x < y$ and $x < z$:

if $y > z$:

$\min, \text{mid}, \max = x, z, y$

else:

$\min, \text{mid}, \max = x, y, z$

if $y < n$ and $y < z$:

if $x > z$:

$\min, \text{mid}, \max = y, z, x$

else:

$\min, \text{mid}, \max = y, x, z$

if $z < n$ and $z < y$:

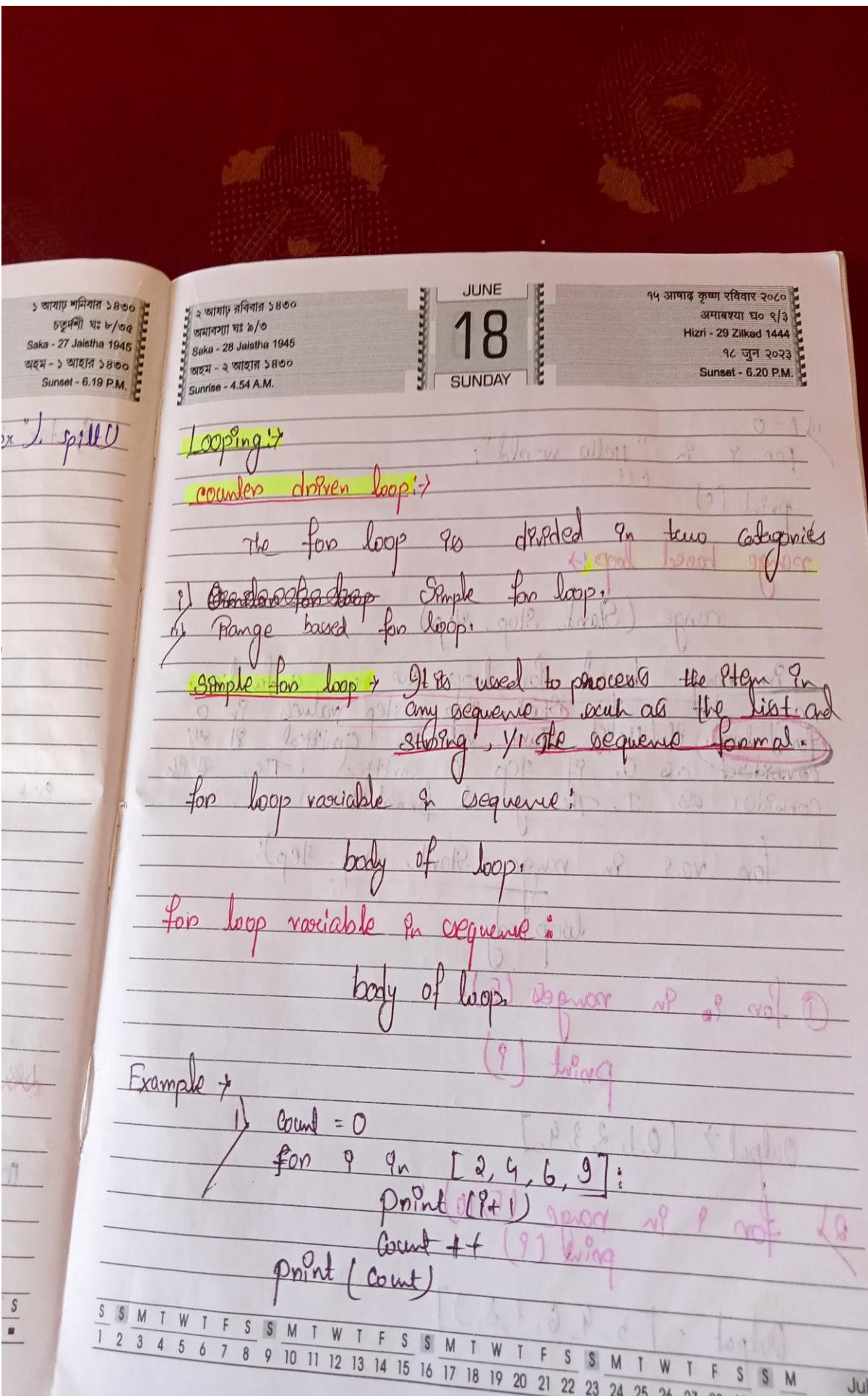
if $n > y$

$\min, \text{mid}, \max = z, y, x$

else:

$\min, \text{mid}, \max = z, x, y$

T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24



৩ আব্দুল শুক্র সোমবার ২০৮০
প্রতিপদ ঘৰ ১/৫৭
Hizri - 30 Zilkad 1444
১৯ জুন ২০২৩
Sunrise - 4.54 A.M.

JUNE

19

MONDAY

৩ আব্দুল সোমবার ১৪৬০
প্রতিপদ ঘৰ ১/৫৭
Saka - 29 Jaiṣṭha 1945
অহম - ৩ আহাৰ ১৪৬০
Sunset - 6.20 P.M.

ii) $c = 0$
for i in "Hello world":
 print (c)

C++

range based loop:

range (Start, Stop, Step)

In range based for loop we use a function range to specify Start, Stop, Step values in a for loop. If the Start value is omitted it is considered as 0. If step is omitted then it is considered as 1. The general format is,

for var in range (Start, Stop, Step):

loop body goes in this loop only

① for i in range (5):

 print (i)

Output $\rightarrow [0, 1, 2, 3, 4]$

② for i in range (5, 10):
 print (i)

Output = [5, 6, 7, 8, 9]

Jun	T	F	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	F	S	
2023 =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

মাসিক পৰাৰ ১৪৩০
 পদ অং ১/২৫
 Jaistha 1945
 মাহিৰ ১৪৩০
 t - 6.20 P.M.

৪ আশাঢ় মঙ্গলবাৰ ১৪৩০
 বিত্তীয়া ঘণ্টা ১১/২৫
 Saka - 30 Jaistha 1945
 অহম - ৪ আহুৰ ১৪৩০
 Sunrise - 4.54 A.M.

JUNE
 20
 TUESDAY
 Rathajatra

২ আশাঢ় শুক্ৰ মঙ্গলবাৰ ২০৬০
 দিতীয়া ঘণ্টা ১১/২৫
 Hizri - 1 Zilhazza 1444
 ২০ জুন ২০২৩
 Sunset - 6.21 P.M.

৩) for i in range (5, 12, 2)
 print (i)

Output = 5, 7, 9, 11.

Q) find the cube of the numbers from 15 to 20.

15**1 | 15**2 | 15**3

for p in (15, 21):
 print ("Sant of", p, "is", p**3)

Q) Sant of every alternate number from 1 to 10.

for p in range (1, 11, 02):
 print ("Sant of", p, "is", p** (0.5))

sentinel driven loop:
 while loop is an conditional loop that will repeat the statement as long as the condition remain true the general form is:

cwhile <condition>:
 body loop.

n₁ = 5
 n₂ = 3
 product = 0
 Count = n₁

S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

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৩ আবাদ শুক্র বুধবার ২০৮০
দৃগ্যা ৩০ ৭/৯
Hijri - 2 Zilhazza 1444
২১ জুন ২০২৩
Sunrise - 4:54 A.M.

JUNE
21
WEDNESDAY

৩ আবাদ বুধবার ১৪৩০
দৃগ্যা ৩০ ১/৯
Saka - 31 Jaiṣṭha 1945
অহম - ৩ আহার ১৪৩০
Sunset - 6:21 P.M.

while count > 0 :

$$\text{count} = \text{count} - 1$$

$$\text{product} = \text{product} + \text{count}$$

print (product)

Jump Statement :-

A break Statement statement ~~executes~~ outside the loop ~~and~~ will start executing. However the loop ~~continues~~ continues ~~statement~~ for a particular condition and continues to cut off the next iteration without terminating the loop :-

Print all odd number b/w 1-10. sub last line

for i in (1, 10):

$$\text{if } i \% 2 == 1:$$

print (i)

else

continue.

Jun	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F							
2023-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

