⌄ Getting started

The document you are reading is not a static web page, but an interactive environment called a **Colab notebook** that lets you write and execute code.

For example, here is a **code cell** with a short Python script that computes a value, stores it in a variable, and prints the result:

```
#To find the downstream depth of open channel
Q = float(input("Enter the value of discharge: "))
B1 = float(input("Enter the value of width at upstream: "))
B2 = float(input("Enter the value of downstream: "))
g = float(input("Enter the value of acceleration due to gravity: "))
y1 = float(input("Enter the value of upstream depth: "))
# Discharge per meter width
q1 = Q / B1
q2 = Q / B2
print("The value of discharge per meter width is:", q1)
print("The value of discharge per meter width is:", q2)
# Area calculation
A1 = B1 * y1
print("The value of upstream is:", A1)
# Calculation of Froude number
Fr1 = ((Q * Q * B1) / (g * A1 * A1 * A1)) ** 0.5
print("The value of Froude number is:", Fr1)
if Fr1 > 1:
 print("The flow is supercritical flow")
else:
 print("The flow is subcritical flow")
# Upstream energy
E1 = y1 + ((Q * Q) / (2 * g * A1 * A1))
print("The value of energy at the initial section is:",E1)
# Calculation of minimum width to avoid choking
B2min = ((27 * Q * Q) / (8 * g * E1 * E1 * E1)) ** 0.5
print("The value of minimum width to be kept to avoid choking is:", B2min)
if B2min > B2:
 print("Choking condition")
else:
 print("SAFE")
# Critical depth
yc = ((Q * Q) / (B2 * 82 * g)) ** 0.3333
print("The value of critical depth is:", yc)
Ec = 1.5 * yc
print("The value of critical energy is:", Ec)
```

```
⇥▾  Enter the value of discharge: 15
    Enter the value of width at upstream: 3.5
    Enter the value of downstream: 2.5
    Enter the value of acceleration due to gravity: 9.81
    Enter the value of upstream depth: 2
    The value of discharge per meter width is: 4.285714285714286
    The value of discharge per meter width is: 6.0
    The value of upstream is: 7.0
    The value of Froude number is: 0.4837753296275688
    The flow is subcritical flow
    The value of energy at the initial section is: 2.234038569556263
    The value of minimum width to be kept to avoid choking is: 2.634860603070728
    Choking condition
    The value of critical depth is: 0.48189408016494045
    The value of critical energy is: 0.7228411202474107
```

```
seconds_in_a_day = 24 * 60 * 60
seconds_in_a_day
```