

All Python Practical's

Practical No.1:- Python Program for Pascal Triangle

```
n = int(input("Enter the number: "))  
for i in range(n):  
    print(" " * (n - i - 1), end="")  
    print("*" * (2 * i + 1), end="")  
    print(" " * (n - i - 1))
```

Output:-

```
      *  
     ***  
    *****  
   *********  
  ***********
```

Practical No.2:- Find out Roots of Quadratic Equations

```
from math import sqrt
```

```
print("Quadratic function: (a * x^2) + b*x + c")
```

```
a = float(input("a: "))
```

```
b = float(input("b: "))
```

```
c = float(input("c: "))
```

```
r = b**2 - 4*a*c
```

```
if a == 0:
```

```
    print("The value of 'a' should not be zero in a quadratic equation.")
```

```
else:
```

```
    if r > 0:
```

```
        num_roots = 2
```

```
        x1 = ((-b) + sqrt(r)) / (2 * a)
```

```
        x2 = ((-b) - sqrt(r)) / (2 * a)
```

```
        print("There are 2 roots: %f and %f" % (x1, x2))
```

```
    elif r == 0:
```

```
        num_roots = 1
```

```
        x = (-b) / (2 * a)
```

```
        print("There is one root: ", x)
```

```
    else:
```

```
num_roots = 0  
print("No roots, discriminant < 0.")
```

Output:-

Quadratic function: $(a * x^2) + b*x + c$

a:

5

b:

20

c:

10

There are 2 roots: -0.585786 and -3.414214

Practical No.3:- Find out Roots of Quadratic Equations

```
n_terms = int(input("How many terms the user wants to print? "))
n_1 = 0
n_2 = 1
count = 0

if n_terms <= 0:
    print("Please enter a positive integer, the given number is not valid")
elif n_terms == 1:
    print("The Fibonacci sequence of the numbers up to", n_terms, ":")
    print(n_1)
else:
    print("The Fibonacci sequence of the numbers is:")
    while count < n_terms:
        print(n_1, end=' ')
        nth = n_1 + n_2
        # update values of n_1 and n_2
        n_1 = n_2
        n_2 = nth
        count += 1
```

Output:-

How many terms the user wants to print?

5

The Fibonacci sequence of the numbers is:

0 1 1 2 3

Practical No.4:- To check the given number is Palindrome or Not

```
num = int(input("Enter a number: "))
temp = num
rev = 0
while(num > 0):
    dig = num % 10
    rev = rev * 10 + dig
    num = num // 10
if(temp == rev):
    print("The number is palindrome!")
else:
    print("Not a palindrome!")
```

Output:-

Enter a number:

121

The number is palindrome!

Practical No.5:- : To find the sum of digits of a given number

```
class Solution:
```

```
    def sum_of_digits(self, num):
```

```
        total = 0
```

```
        while num != 0:
```

```
            total += num % 10
```

```
            num //= 10
```

```
        return total
```

```
ob = Solution()
```

```
print(ob.sum_of_digits(512))
```

Output:-

8

Practical No.6:- Python program to remove the punctuations from a string.

```
punctuation = '!()-[]{};:\'"\\,<>./?@#$%^&* _~'
my_str = input("Enter a string: ")
no_punct = ""
for char in my_str:
    if char not in punctuation:
        no_punct += char
print(no_punct)
```

Output:-

Enter a string:

Python@#\$123

Python123

Practical No.7:- Python program to implement the simple calculator

```
def add(P, Q):
```

```
    return P + Q
```

```
def subtract(P, Q):
```

```
    return P - Q
```

```
def multiply(P, Q):
```

```
    return P * Q
```

```
def divide(P, Q):
```

```
    if Q != 0: # Check to prevent division by zero
```

```
        return P / Q
```

```
    else:
```

```
        return "Cannot divide by zero!"
```

```
print("Please select the operation.")
```

```
print("a. Add")
```

```
print("b. Subtract")
```

```
print("c. Multiply")
```

```
print("d. Divide")
```

```
choice = input("Please enter choice (a/ b/ c/ d): ")
```

```
num_1 = int(input("Please enter the first number: "))
```

```
num_2 = int(input("Please enter the second number: "))
```

```
if choice == 'a':
```

```
    print(num_1, " + ", num_2, " = ", add(num_1, num_2))
```

```
elif choice == 'b':
```

```
    print(num_1, " - ", num_2, " = ", subtract(num_1, num_2))
```

```
elif choice == 'c':
```

```
    print(num_1, " * ", num_2, " = ", multiply(num_1, num_2))
```

```
elif choice == 'd':
```

```
    if num_2 != 0: # Check to ensure second number is not zero before  
dividing
```

```
        print(num_1, " / ", num_2, " = ", divide(num_1, num_2))
```

```
    else:
```

```
        print("Cannot divide by zero!")
```

```
else:
```

```
    print("This is an invalid input")
```

Output:-

Please select the operation.

- a. Add
- b. Subtract
- c. Multiply
- d. Divide

Please enter choice (a/ b/ c/ d):

A

Please enter the first number:

10

Please enter the second number:

20

$10 + 20 = 30$

Practical No.8:- Python program for reverse string.

```
def reverse_string(s):  
    str1 = ""  
    for i in s:  
        str1 = i + str1  
    return str1  
  
original_str = "M.J.college,Jalgaon"  
print("The original string is: ", original_str)  
print("The reversed string is", reverse_string(original_str))
```

Output:-

The original string is: M.J.college,Jalgaon

The reversed string is noaglaJ,egelloC.J.M

Practical No.9:- Python Program implementation of the Anonymous Function Lambda

```
x = lambda a, b, c : a + b + c  
print(x(5, 6, 2))
```

Output:-

13

Code to filter odd numbers from a given list

```
list_ = [34, 12, 64, 55, 75, 13, 63]  
odd_list = list(filter(lambda num: (num % 2 != 0), list_))  
print(odd_list)
```

Output:-

[55, 75, 13, 63]

Practical No.10:- Construct a GUI application to generate the employee pay slip.

```
import tkinter as tk

from tkinter import messagebox

def generate_payslip():
    try:
        # Get values from entries
        name = name_entry.get()
        hours_worked = float(hours_worked_entry.get())
        pay_rate = float(pay_rate_entry.get())
        gross_pay = hours_worked * pay_rate

        tax = gross_pay * 0.2 # Assume a flat 20% tax rate
        net_pay = gross_pay - tax

        payslip_message = f"""
        Employee Name: {name}
        Hours Worked: {hours_worked}
        Pay Rate: ₹{pay_rate:.2f} per hour
        Gross Pay: ₹{gross_pay:.2f}
        Tax Deducted (20%): ₹{tax:.2f}
        Net Pay: ₹{net_pay:.2f}
        """
```

```
        messagebox.showinfo("Payslip", payslip_message)
except ValueError:
    messagebox.showerror(
        "Error", "Please enter numeric values for hours worked and
pay rate.")

root = tk.Tk()
root.title("Payslip Generator")

tk.Label(root, text="Employee Name:").grid(row=0, column=0)
name_entry = tk.Entry(root)
name_entry.grid(row=0, column=1)

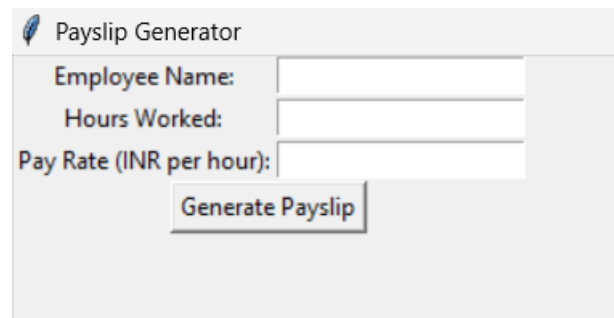
tk.Label(root, text="Hours Worked:").grid(row=1, column=0)
hours_worked_entry = tk.Entry(root)
hours_worked_entry.grid(row=1, column=1)

tk.Label(root, text="Pay Rate (INR per hour):").grid(row=2, column=0)
pay_rate_entry = tk.Entry(root)
pay_rate_entry.grid(row=2, column=1)

generate_button = tk.Button(
    root, text="Generate Payslip", command=generate_payslip)
generate_button.grid(row=3, columnspan=2)
```

```
root.mainloop()
```

Output:-



The screenshot shows a window titled "Payslip Generator" with a feather icon. It contains three input fields: "Employee Name:", "Hours Worked:", and "Pay Rate (INR per hour):". A "Generate Payslip" button is located below the input fields.

Field	Value
Employee Name:	
Hours Worked:	
Pay Rate (INR per hour):	

Generate Payslip

Practical No.11:- Construct a GUI application to perform the Arithmetic operations Read Input Values through input window and Display the result in Message Box.

```
from tkinter import *
```

```
class MyWindow:
```

```
    def __init__(self, win):
```

```
        self.lbl1 = Label(win, text='First number')
```

```
        self.lbl2 = Label(win, text='Second number')
```

```
        self.lbl3 = Label(win, text='Result')
```

```
        self.t1 = Entry(bd=3)
```

```
        self.t2 = Entry()
```

```
        self.t3 = Entry()
```

```
        self.lbl1.place(x=100, y=50)
```

```
        self.t1.place(x=200, y=50)
```

```
        self.lbl2.place(x=100, y=100)
```

```
        self.t2.place(x=200, y=100)
```

```
        self.b1 = Button(win, text='Add', command=self.add)
```

```
        self.b2 = Button(win, text='Subtract', command=self.sub)
```

```
        self.b3 = Button(win, text="Multiplication", command=self.mul)
```

```
        self.b4 = Button(win, text="Division", command=self.div)
```

```
self.b1.place(x=100, y=150)
```

```
self.b2.place(x=200, y=150)
```

```
self.b3.place(x=300, y=150)
```

```
self.b4.place(x=400, y=150)
```

```
self.lbl3.place(x=100, y=200)
```

```
self.t3.place(x=200, y=200)
```

```
def add(self):
```

```
    self.t3.delete(0, 'end')
```

```
    num1 = int(self.t1.get())
```

```
    num2 = int(self.t2.get())
```

```
    result = num1 + num2
```

```
    self.t3.insert(END, str(result))
```

```
def sub(self):
```

```
    self.t3.delete(0, 'end')
```

```
    num1 = int(self.t1.get())
```

```
    num2 = int(self.t2.get())
```

```
    result = num1 - num2
```

```
    self.t3.insert(END, str(result))
```

```
def mul(self):
```

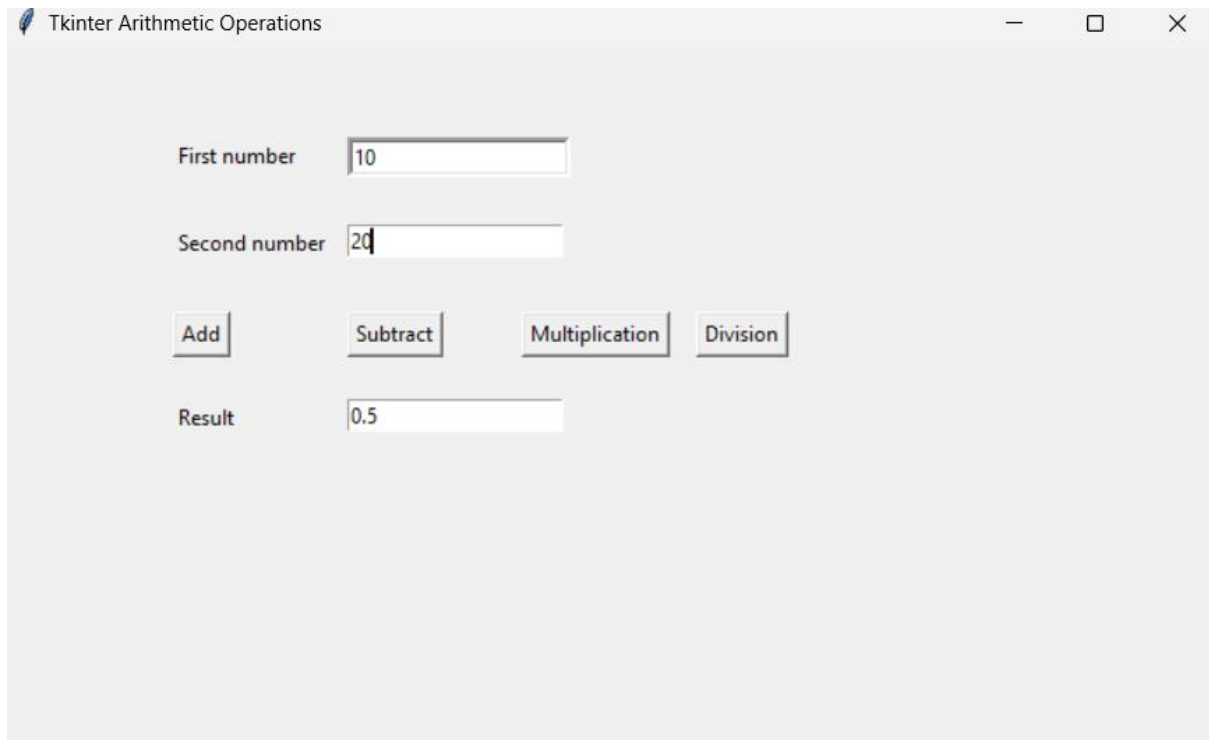
```
    self.t3.delete(0, 'end')
```

```
num1 = int(self.t1.get())
num2 = int(self.t2.get())
result = num1 * num2
self.t3.insert(END, str(result))
```

```
def div(self):
    self.t3.delete(0, 'end')
    num1 = int(self.t1.get())
    num2 = int(self.t2.get())
    if num2 == 0:
        self.t3.insert(END, 'Error: Div by 0')
    else:
        result = num1 / num2
        self.t3.insert(END, str(result))
```

```
window = Tk()
mywin = MyWindow(window)
window.title('Tkinter Arithmetic Operations')
window.geometry("700x500+10+10")
window.mainloop()
```

Output:-



The image shows a Tkinter window titled "Tkinter Arithmetic Operations". It contains a form for performing arithmetic operations. The "First number" field is set to 10, and the "Second number" field is set to 20. The "Add", "Subtract", "Multiplication", and "Division" buttons are visible. The "Result" field displays 0.5, which is the result of dividing 10 by 20.

Field	Value
First number	10
Second number	20
Operation	Division
Result	0.5