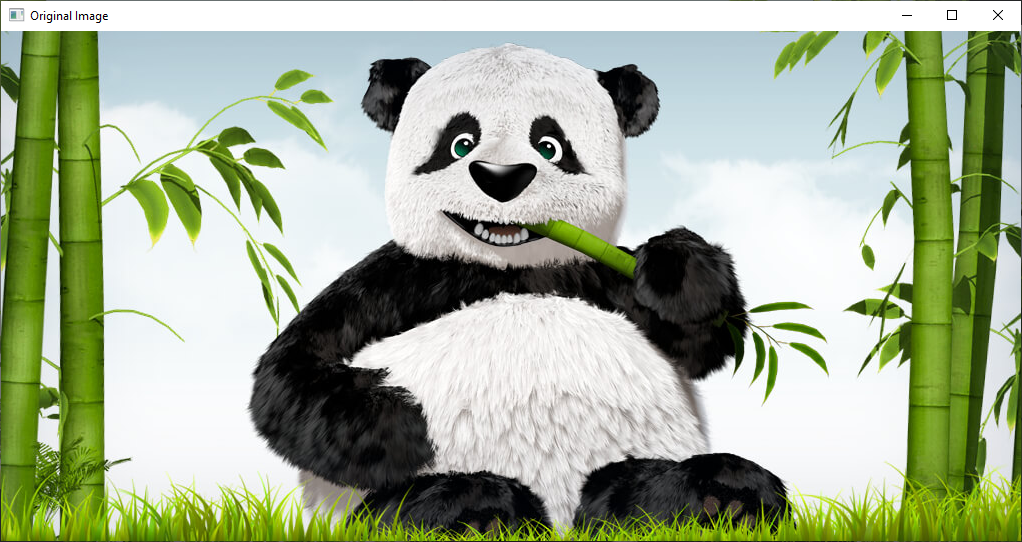
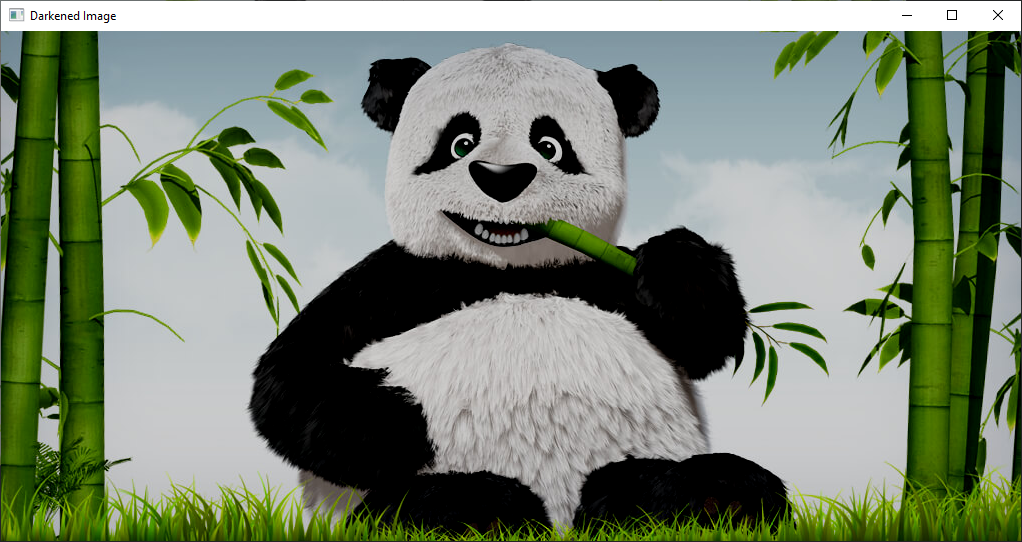
**32. A.Demonstrate Arithmetic operations for Brightening and Darkening of images**

**CODE**:

import cv2  
import numpy as np  
  
def brighten\_image(image, brightness\_factor):  
 # Convert the image to float32 for arithmetic operations  
 result = image.astype(np.float32)  
  
 # Brighten the image by scaling pixel values  
 result = result + brightness\_factor  
  
 # Clip the pixel values to the valid range [0, 255]  
 result = np.clip(result, 0, 255)  
  
 # Convert back to uint8 for displaying the image  
 result = result.astype(np.uint8)  
  
 return result  
  
def darken\_image(image, darkness\_factor):  
 # Convert the image to float32 for arithmetic operations  
 result = image.astype(np.float32)  
  
 # Darken the image by scaling pixel values  
 result = result - darkness\_factor  
  
 # Clip the pixel values to the valid range [0, 255]  
 result = np.clip(result, 0, 255)  
  
 # Convert back to uint8 for displaying the image  
 result = result.astype(np.uint8)  
  
 return result  
  
# Example usage:  
image = cv2.imread('website.jpg') # Replace with your image path  
cv2.imshow('Original Image', image)  
  
# Brighten the image by a factor (e.g., 50)  
brightened\_image = brighten\_image(image, 50)  
cv2.imshow('Brightened Image', brightened\_image)  
  
# Darken the image by a factor (e.g., 50)  
darkened\_image = darken\_image(image, 50)  
cv2.imshow('Darkened Image', darkened\_image)  
  
cv2.waitKey(0)  
cv2.destroyAllWindows()

**OUTPUT:**

****

****

****

**B. Write a python code to create a student database**

**CODE**

class StudentDatabase:  
 def \_\_init\_\_(self):  
 self.students = {}  
  
 def add\_student(self, name, age, grade):  
 self.students[name] = {'Age': age, 'Grade': grade}  
  
 def display\_database(self):  
 print("Student Database:")  
 for name, info in self.students.items():  
 print(f"Name: {name}, Age: {info['Age']}, Grade: {info['Grade']}")  
  
# Creating an instance of the StudentDatabase  
database = StudentDatabase()  
  
# Adding students to the database  
database.add\_student('Shri Raghavi', 20, 'A')  
database.add\_student('Shudhi Rishaa', 21, 'B')  
database.add\_student('Kumudini', 22, 'C')  
  
# Displaying the student database  
database.display\_database()

**OUTPUT:**

C:\Users\22R442\PycharmProjects\pythonProject\.venv\Scripts\python.exe C:\Users\22R442\PycharmProjects\pythonProject\.venv\v3.py

Student Database:

Name: Shri Raghavi, Age: 20, Grade: A

Name: Shudhi Rishaa, Age: 21, Grade: B

Name: Kumudini, Age: 22, Grade: C

Process finished with exit code 0