Group A

Assignment-1 : Conflation Algorithm

Input:

```
package com.cl.conflation;

import java.io.BufferedReader;

import java.io.FileNotFoundException;

import java.io.FileReader;

import java.io.IOException;

import java.io.InputStreamReader;

import java.util.ArrayList;

import java.util.HashMap;

import java.util.Iterator;

import java.util.Map;


public class Conflation {

   public static ArrayList<String> stopList = new ArrayList<String>();

   public static ArrayList<String> removestopList = new ArrayList<String>();

   public static String suffixes[] = { "able", "ing", "ion", "y", "ment" };

   public static String stopwords[] = { "i", "big", "am", "m", "a",

                              "we", "are", "it", "of", "this", "and", "is", "to",

                              "at", "in", "was", "with", "doing", "It", "not", "our" };


   public static void main(String[] args) {

      InputStreamReader st = new InputStreamReader(System.in);

      BufferedReader buff = new BufferedReader(st);

      String fname = "";

      System.out.println("Enter a filename:");

      try {

         fname = buff.readLine();

      } catch (IOException e) {

         e.printStackTrace();

      }

      conflation(fname);

   }


   public static void conflation(String fname) {

      BufferedReader buff;
```

```
    int i = 0, j = 0;
    try {
        buff = new BufferedReader(new FileReader(fname));
        int flag = 0;
        String line = "";
        line = buff.readLine();
        String[] buffer = line.split(" ");
        for (i = 0; i < buffer.length; i++) {
            flag = 0;
            if (buffer[i].endsWith(".")) {
                buffer[i] = buffer[i].replace(".", "");
            }

            for (j = 0; j < stopwords.length; j++) {
                if (buffer[i].equals(stopwords[j])) {
                    stopList.add(buffer[i]);
                    flag = 1;
                    break;
                }
            }
            if (flag != 1 && !buffer[i].equals(null)) {
                removestopList.add(buffer[i]);
            }
        }
        System.out.println("\n----------After Removing Stop Words----------");
        for (int k = 0; k < removestopList.size(); k++) {
            System.out.println(removestopList.get(k));
        }
        suffixesString(removestopList);
        countFrequency(removestopList);

    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    }
}

private static void countFrequency(ArrayList<String> removestopList) {
```

```
    // Mapping of String->Integer (word -> frequency)
    System.out.println("\n\n-------After Counting Frequency---------");
    final Map<String, Integer> frequencyMap = new HashMap<String, Integer>();
    for (int k = 0; k < removestopList.size(); k++) {
        String currentWord = removestopList.get(k);
        Integer frequency = frequencyMap.get(currentWord);
        // Add the word if it doesn't already exist, otherwise increment the frequency
        // counter.
        if (frequency == null) {
            frequency = 0;
        }
        frequencyMap.put(currentWord, frequency + 1);
    }
    Iterator<Map.Entry<String, Integer>> entries = frequencyMap.entrySet().iterator();
    while (entries.hasNext()) {
        Map.Entry<String, Integer> entry = entries.next();
        String key = entry.getKey();
        Integer value = entry.getValue();
        System.out.println(key + " = " + value);
    }
}

private static void suffixesString(ArrayList<String> removestopList) {
    System.out.println("\n\n--------After Removing Suffixes---------");
    for (int k = 0; k < removestopList.size(); k++) {
        String suffixString = removestopList.get(k);
        int flag = 0;
        for (int m = 0; m < suffixes.length; m++) {
            if (suffixString.endsWith(suffixes[m])) {
                int len = suffixString.length();
                int len1 = suffixes[m].length();
                int len2 = len - len1;

                String sufString = suffixString.substring(0, len2);

                System.out.print(suffixString + "\t\t");
                System.out.println(sufString);
                flag = 1;
                break;
```

```
            }
          }
          if (flag != 1)
            System.out.println(suffixString + "\t\t" + suffixString);
        }
      }
}
```

Input.txt

This is a sample input file. It contains some words and punctuation, like this word.

We are testing the conflation program. It should remove stopwords and count word frequencies properly.

Output :

Enter a filename:

LP-III\com\cl\conflation\Input.txt

----------After Removing Stop Words----------

This

sample

input

file

contains

some

words

punctuation,

like

word

--------After Removing Suffixes---------

This This

sample sample

input input

file file

contains contains

some some

words words

punctuation, punctuation,

like like

word word

-------After Counting Frequency---------

input = 1

some = 1

contains = 1

file = 1

like = 1

words = 1

This = 1

sample = 1

punctuation, = 1

word = 1

```
C:\Users\asus\Downloads\LP-III> cmd /C ""C:\Program Files\Java\jdk-1.8\bin\java.exe" -cp C:\Users\asus\AppData\Roaming\Code\User\workspaceStorage\efed96b8559dad
bdf1db495875e53bc4\redhat.java\jdt_ws\LP-III_7c95a864\bin com.cl.ISR_Lab.Conflation "
Enter a filename:
LP-III\com\cl\ISR_Lab\Input.txt

--------------After Removing Stop Words-----------------
This
sample
input
file
contains
some
words
punctuation,
like
word


--------After Removing Suffixes---------
This            This
sample          sample
input           input
file            file
contains                contains
some            some
words           words
punctuation,            punctuation,
like            like
word            word


-------After Counting Frequency---------
input = 1
some = 1
contains = 1
file = 1
like = 1
words = 1
This = 1
sample = 1
punctuation, = 1
```

Assignment-2 : Single Pass Clustering Algorithm

Input:

```
package com.cl.ISR_Lab;


import java.io.BufferedReader;

import java.io.IOException;

import java.io.InputStreamReader;

import java.util.ArrayList;


public class SinglePass {


  public static void main(String[] args) throws IOException {

    BufferedReader stdInpt = new BufferedReader(new InputStreamReader(System.in));

    System.out.println("Enter the number of Tokens:");

    int noOfDocuments = Integer.parseInt(stdInpt.readLine());

    System.out.println("Enter the number of Documents:");

    int noOfTokens = Integer.parseInt(stdInpt.readLine());

    System.out.println("Enter the threshold:");

    float threshold = Float.parseFloat(stdInpt.readLine());

    System.out.println("Enter the Document Token Matrix:");


    int[][] input = new int[noOfDocuments][noOfTokens];

    for (int i = 0; i < noOfDocuments; i++) {

      for (int j = 0; j < noOfTokens; j++) {

        System.out.println("Enter (" + i + "," + j + "):");

        input[i][j] = Integer.parseInt(stdInpt.readLine());

      }

    }


    SinglePassAlgorithm(noOfDocuments, noOfTokens, threshold, input);

  }


  private static void SinglePassAlgorithm(int noOfDocuments, int noOfTokens, float threshold, int[][] input) {

    int[][] cluster = new int[noOfDocuments][noOfDocuments + 1];

    ArrayList<Float[]> clusterRepresentative = new ArrayList<>();

    cluster[0][0] = 1;
```

```
cluster[0][1] = 0;
int noOfClusters = 1;

Float[] temp = new Float[noOfTokens];
temp = convertIntArrToFloatArr(input[0]);
clusterRepresentative.add(temp);

for (int i = 1; i < noOfDocuments; i++) {
   float max = -1;
   int clusterId = -1;
   for (int j = 0; j < clusterRepresentative.size(); j++) {
      float similarity = calculateSimilarity(convertIntArrToFloatArr(input[i]), clusterRepresentative.get(j));
      if (similarity > threshold) {
         if (similarity > max) {
            max = similarity;
            clusterId = j;
         }
      }
   }

   if (max == -1) {
      cluster[noOfClusters][0] = 1;
      cluster[noOfClusters][1] = i;
      noOfClusters++;
      clusterRepresentative.add(convertIntArrToFloatArr(input[i]));
   } else {
      cluster[clusterId][0] += 1;
      int index = cluster[clusterId][0];
      cluster[clusterId][index] = i;
      clusterRepresentative.set(clusterId, calculateClusterRepresentative(cluster[clusterId], input, noOfTokens));
   }
}

for (int i = 0; i < noOfClusters; i++) {
   System.out.print("\n" + i + "\t");
   for (int j = 1; j <= cluster[i][0]; j++) {
      System.out.print(" " + cluster[i][j]);
   }
```

```
        }
    }

    private static Float[] convertIntArrToFloatArr(int[] input) {
        int size = input.length;
        Float[] answer = new Float[size];
        for (int i = 0; i < size; i++) {
            answer[i] = (float) input[i];
        }
        return answer;
    }

    private static float calculateSimilarity(Float[] a, Float[] b) {
        float answer = 0;
        for (int i = 0; i < a.length; i++) {
            answer += a[i] * b[i];
        }
        return answer;
    }

    private static Float[] calculateClusterRepresentative(int[] cluster, int[][] input, int noOfTokens) {
        Float[] answer = new Float[noOfTokens];
        for (int i = 0; i < noOfTokens; i++) {
            answer[i] = Float.parseFloat("0");
        }
        for (int i = 1; i <= cluster[0]; i++) {
            for (int j = 0; j < noOfTokens; j++) {
                answer[j] += input[cluster[i]][j];
            }
        }
        for (int i = 0; i < noOfTokens; i++) {
            answer[i] /= cluster[0];
        }
        return answer;
    }
}
```

Ouput:

Enter the number of Tokens:

5

Enter the number of Documents:

5

Enter the threshold:

10

Enter the Document Token Matrix:

Enter (0,0):

1

Enter (0,1):

3

Enter (0,2):

3

Enter (0,3):

2

Enter (0,4):

2

Enter (1,0):

2

Enter (1,1):

1

Enter (1,2):

0

Enter (1,3):

1

Enter (1,4):

2

Enter (2,0):

0

Enter (2,1):

2

Enter (2,2):

0

Enter (2,3):

0

Enter (2,4):

1

Enter (3,0):

0

Enter (3,1):

3

Enter (3,2):

1

Enter (3,3):

0

Enter (3,4):

5

Enter (4,0):

1

Enter (4,1):

0

Enter (4,2):

1

Enter (4,3):

0

Enter (4,4):

1

0 0 1 3

1 2

2 4

Assignment-3 : Retrieval of docs using Inverted files

Input:

```
package com.cl.ISR_Lab;

import java.io.BufferedReader;

import java.io.FileReader;

import java.io.IOException;

import java.io.InputStreamReader;

import java.util.ArrayList;


public class InvertedFile {


  public static void displayIndex(ArrayList<String> invertedData, int[][] docno) {
    int i, j;
    for (i = 0; i < invertedData.size(); i++) {
      System.out.print(invertedData.get(i) + "\t");
      for (j = 1; j <= docno[i][0]; j++) {
        System.out.print(docno[i][j] + "\t");
      }
      System.out.print("\n");
    }
  }


  public static void indexing(String fname, ArrayList<String> invertedData, int[][] docno, int fileno) {
    BufferedReader br;
    try {
      br = new BufferedReader(new FileReader(fname));
      String data = "", line = br.readLine();


      while (line != null) {
        data += line + " ";
        line = br.readLine();
      }
      String[] st = data.split("[ ,.]");
      String currenttoken = null;
      int i = 0;
      while (i < st.length) {
        currenttoken = st[i];
        int indx = invertedData.indexOf(currenttoken);
```

```
            if (indx == -1) {
                invertedData.add(currenttoken);
                indx = invertedData.indexOf(currenttoken);
                docno[indx][0] = 1;
                docno[indx][1] = fileno;
            } else {
                docno[indx][docno[indx][0] + 1] = fileno;
                docno[indx][0] += 1;
            }
            i += 1;
        }
    } catch (Exception e) {
        e.printStackTrace();
    }
  }

  public static void main(String[] args) throws NumberFormatException, IOException {
    String fname = "";
    ArrayList<String> invertedData = new ArrayList<>();
    int docno[][] = new int[100][10];
    InputStreamReader ins = new InputStreamReader(System.in);
    BufferedReader br = new BufferedReader(ins);
    System.out.println("\nENTER TOTAL NO OF FILES:");
    int no = Integer.parseInt(br.readLine());
    int i = 1;
    while (i <= no) {
        System.out.println("\nENTER FILE " + i + " NAME:");
        fname = br.readLine();
        indexing(fname, invertedData, docno, i);
        i += 1;
    }
    displayIndex(invertedData, docno);
  }
}
```

InputFiles:

Anil.txt how are you anil kumar

Anil2.txt how are you anil kumar and hi.

Ouput:

ENTER TOTAL NO OF FILES:

2

ENTER FILE 1 NAME:

LP-III\com\cl\ISR_Lab\anil.txt

ENTER FILE 2 NAME:

LP-III\com\cl\ISR_Lab\anil2.txt

how 1 2

are 1 2

you 1 2

anil 1 2

kumar 1 2

and 2

hi 2

Group B

Assignment-1 : Cal. Precision & Recall

Input:

```
package com.cl.ISR_Lab;

import java.util.HashSet;

import java.util.Set;


public class B1_PrecisionRecallCalculator {

  // Method to calculate precision and recall

  public static void calculatePrecisionRecall(Set<String> retrievedDocs, Set<String> relevantDocs) {

    // Edge case: If no documents are retrieved, precision is undefined, set to 0

    if (retrievedDocs.isEmpty()) {

      System.out.println("Precision: 0.00");

      System.out.println("Recall: 0.00");

      //System.out.println("F1 Score: 0.00");

      return;

    }


    // Calculate true positives (intersection of retrieved and relevant documents)

    Set<String> truePositives = new HashSet<>(retrievedDocs);

    truePositives.retainAll(relevantDocs);


    // Precision: True Positives / Retrieved Documents

    double precision = (double) truePositives.size() / retrievedDocs.size();


    // Recall: True Positives / Relevant Documents

    double recall = relevantDocs.isEmpty() ? 0 : (double) truePositives.size() / relevantDocs.size();


    // F1 Score: 2 * (Precision * Recall) / (Precision + Recall)

    double f1Score = (precision + recall == 0) ? 0 : 2 * (precision * recall) / (precision + recall);


    // Print the results

    System.out.printf("Precision: %.2f%n", precision);

    System.out.printf("Recall: %.2f%n", recall);

    //System.out.printf("F1 Score: %.2f%n", f1Score);

  }
```

```
    public static void main(String[] args) {
        // Sample input for query q1
        Set<String> retrievedDocs = new HashSet<>();
        retrievedDocs.add("doc1");
        retrievedDocs.add("doc2");
        retrievedDocs.add("doc3");
        retrievedDocs.add("doc4");

        Set<String> relevantDocs = new HashSet<>();
        relevantDocs.add("doc2");
        relevantDocs.add("doc3");
        relevantDocs.add("doc5");

        // Call the function to calculate precision and recall
        calculatePrecisionRecall(retrievedDocs, relevantDocs);
    }
}
```

Output:

```
PS C:\Users\Student\Desktop\ISR>  & 'C:\Program Files\Eclipse Foundation\jdk-16.0.2.7-hotspot\bin\java.exe' '-agentli
b:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:37731' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp
' 'C:\Users\Student\AppData\Roaming\Code\User\workspaceStorage\5f277695bf64c2797015be7a4477e0b6\redhat.java\jdt_ws\IS
R_37a25b82\bin' 'B1_PrecisionRecallCalculator'
Precision: 0.50
Recall: 0.67
PS C:\Users\Student\Desktop\ISR>
```

Calculations

- True Positives (TP): The intersection of `retrievedDocs` and `relevantDocs`:
  - `{"doc2", "doc3"}` → TP = 2
- Precision:
  - $\text{Precision} = \frac{TP}{\text{Retrieved}} = \frac{2}{4} = 0.5$
- Recall:
  - $\text{Recall} = \frac{TP}{\text{Relevant}} = \frac{2}{3} \approx 0.67$
- F1 Score:
  - $F1 = \frac{2 \times (\text{Precision} \times \text{Recall})}{\text{Precision} + \text{Recall}} = \frac{2 \times (0.5 \times 0.67)}{0.5 + 0.67} \approx 0.57$

Assignment-2 :

Cal. Harmonic Mean(F-measure) & E-Measure

Input:

```
package com.cl.ISR_Lab;

import java.util.HashSet;

import java.util.Set;


public class b2_PrecisionRecallCalculator_HM {

  // Method to calculate precision and recall

  public static void calculatePrecisionRecall(Set<String> retrievedDocs, Set<String> relevantDocs) {

    // Edge case: If no documents are retrieved, precision and recall are 0

    if (retrievedDocs.isEmpty()) {

      System.out.println("Precision: 0.00");

      System.out.println("Recall: 0.00");

      System.out.println("F1-measure: 0.00");

      System.out.println("E-measure: 0.00");

      return;

    }


    // Calculate true positives (intersection of retrieved and relevant documents)

    Set<String> truePositives = new HashSet<>(retrievedDocs);

    truePositives.retainAll(relevantDocs);


    // Precision: True Positives / Retrieved Documents

    double precision = (double) truePositives.size() / retrievedDocs.size();


    // Recall: True Positives / Relevant Documents

    double recall = relevantDocs.isEmpty() ? 0 : (double) truePositives.size() / relevantDocs.size();


    // F1-Measure: Harmonic mean of Precision and Recall

    double f1 = (precision + recall > 0) ? 2 * ((precision * recall) / (precision + recall)) : 0;


    // E-measure: Effectiveness measure with alpha = 0.5 (equal weight to precision and recall)

    double alpha = 0.5;

    double eMeasure = (precision > 0 && recall > 0)
```

```
                ? 1 - (1 / ((alpha / precision) + ((1 - alpha) / recall)))
                : 0;

        // Print the results
        System.out.printf("Precision: %.2f%n", precision);
        System.out.printf("Recall: %.2f%n", recall);
        System.out.printf("F1-Measure: %.2f%n", f1);
        System.out.printf("E-Measure: %.2f%n", eMeasure);
    }

    public static void main(String[] args) {
        // Sample input for query q1
        Set<String> retrievedDocs = new HashSet<>();
        retrievedDocs.add("doc1");
        retrievedDocs.add("doc2");
        retrievedDocs.add("doc3");
        retrievedDocs.add("doc4");

        Set<String> relevantDocs = new HashSet<>();
        relevantDocs.add("doc2");
        relevantDocs.add("doc3");
        relevantDocs.add("doc5");

        // Call the function to calculate precision, recall, F1-measure, and E-measure
        calculatePrecisionRecall(retrievedDocs, relevantDocs);
    }
}
```

Output:

```
PS C:\Users\Student\Desktop\ISR>  & 'C:\Program Files\Eclipse Foundation\jdk-16.0.2.7-hotspot\bin\java.exe' '-agentli
b:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:37585' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp
' 'C:\Users\Student\AppData\Roaming\Code\User\workspaceStorage\5f277695bf64c2797015be7a4477e0b6\redhat.java\jdt_ws\IS
R_37a25b82\bin' 'PrecisionRecallCalculator_HM'
Precision: 0.50
Recall: 0.67
F1-Measure: 0.57
E-Measure: 0.43
PS C:\Users\Student\Desktop\ISR>
```

Definitions:

1. **F-measure (F1 Score)**: The harmonic mean of precision and recall.

$$F1 = \frac{2 \times (\text{Precision} \times \text{Recall})}{\text{Precision} + \text{Recall}}$$

2. **E-measure**: A measure that considers both precision and recall, typically defined as:

$$E = \frac{\text{Precision} \times \text{Recall}}{\alpha \times \text{Precision} + (1 - \alpha) \times \text{Recall}}$$

where α is a parameter that balances the contribution of precision and recall. A common choice is $\alpha = 0.5$.

Assignment-3 : Feature Extraction in 2D Color Image

Input:

```
import matplotlib.pyplot as plt  # Importing matplotlib for image display and plotting
import cv2  # Importing OpenCV for image processing
from skimage.color import rgb2gray  # Importing function to convert image to grayscale
from skimage.filters import threshold_otsu, gaussian  # Importing Otsu thresholding and Gaussian filter
from skimage.io import imread  # Importing function to read images


# Load and display the original image
image = imread(r"C:\\Users\\asus\\Downloads\\suhail\\ISR LAb\\123.jpg")
plt.imshow(image)
plt.title("Original Image")
plt.axis('off')
plt.show()


# Create red and yellow intensity images
red, yellow = image.copy(), image.copy()
# Set green and blue channels to 0 for red image
red[:, :, (1, 2)] = 0
# Set blue channel to 0 for yellow image (leaving only red and green)
yellow[:, :, 2] = 0
# Display red and yellow intensity images
fig, axes = plt.subplots(1, 2, figsize=(10, 5))
axes[0].imshow(red)
axes[0].set_title("Red Intensity")
axes[0].axis('off')
axes[1].imshow(yellow)
axes[1].set_title("Yellow Intensity")
axes[1].axis('off')
plt.show()
# Convert the image to grayscale
gray_image = rgb2gray(image)
# Display the original and grayscale images side by side
fig, axes = plt.subplots(1, 2, figsize=(10, 5))
axes[0].imshow(image)
axes[0].set_title("Color Image")
axes[0].axis('off')
axes[1].imshow(gray_image, cmap='gray')
```

```
axes[1].set_title("Grayscale Image")
axes[1].axis('off')
plt.show()
# Print the dimensions of the images
print("Colored image shape:", image.shape)
print("Grayscale image shape:", gray_image.shape)
# Apply Otsu's thresholding to the grayscale image
thresh = threshold_otsu(gray_image)
binary_image = gray_image > thresh
# Display grayscale and binary (thresholded) images
fig, axes = plt.subplots(1, 2, figsize=(10, 5))
axes[0].imshow(gray_image, cmap='gray')
axes[0].set_title("Grayscale Image")
axes[0].axis('off')
axes[1].imshow(binary_image, cmap='gray')
axes[1].set_title("Otsu Binary Image")
axes[1].axis('off')
plt.show()
# Apply Gaussian blur to the grayscale image
blurred_image = gaussian(gray_image, sigma=20)
# Display the grayscale image and the blurred image
fig, axes = plt.subplots(1, 2, figsize=(10, 5))
axes[0].imshow(gray_image, cmap='gray')
axes[0].set_title("Grayscale Image")
axes[0].axis('off')
axes[1].imshow(blurred_image, cmap='gray')
axes[1].set_title("20 Sigma Blurred Image")
axes[1].axis('off')
plt.show()
# Example: Reading and plotting histogram of an image using OpenCV and Matplotlib
img = cv2.imread('ex.jpg', 0)  # Load the image in grayscale
# Calculate the histogram for grayscale image (0-255 intensity levels)
histg = cv2.calcHist([img], [0], None, [256], [0, 256])
# Plot the histogram to analyze pixel intensity distribution
plt.plot(histg)
plt.title('Histogram of Grayscale Image')
plt.xlabel('Pixel Intensity')
plt.ylabel('Frequency')
plt.show()
```

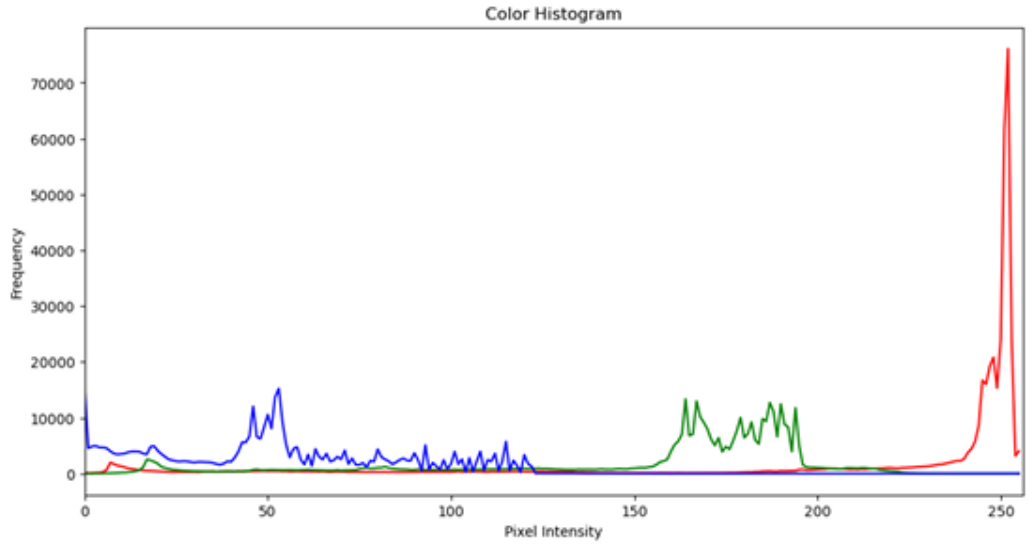
```
import cv2
import numpy as np
import matplotlib.pyplot as plt
from skimage import io

image_path = "123.jpg" # Replace with your image path
image = cv2.imread(image_path)
image_rgb = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)

def plot_color_histogram(image):
    color = ('r', 'g', 'b')
    plt.figure(figsize=(12, 6))
    for i, col in enumerate(color):
        hist = cv2.calcHist([image], [i], None, [256], [0, 256])
        plt.plot(hist, color=col)
        plt.xlim([0, 256])
    plt.title('Color Histogram')
    plt.xlabel('Pixel Intensity')
    plt.ylabel('Frequency')
    plt.show()

# Plot color histogram
plot_color_histogram(image_rgb)
```

Output:



Original Image

Red Intensity

Yellow Intensity

Color

Grayscale

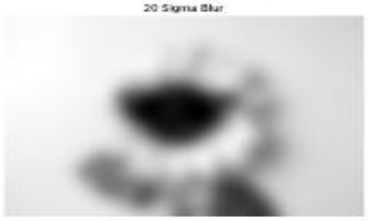
```
Colored image shape: (525, 800, 3)
Grayscale image shape: (525, 800)
```

Grayscale

Otsu Binary

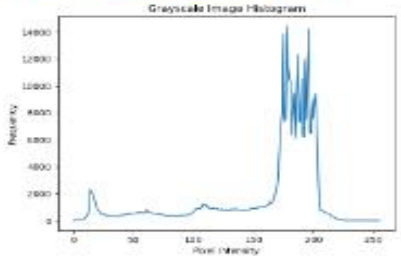
Gray Image

20 Sigma Blur



Loaded JPG Image

Grayscale Image Histogram



Group C

Assignment-1 : Web Crawler

Input:

```
import requests

from bs4 import BeautifulSoup

headers = {'User-Agent': 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/111.0.0.0 Safari/537.36'}

request = requests.get("https://www.amazon.in/s?k=mobile+phone+under+20000&crid=2J6DM5J2AVMGE&sprefix=mobile%2Caps%2C256&ref=nb_sb_ss_ts-doa-p_3_63",headers=headers)

# print(request)

# print(request.content)


soup = BeautifulSoup(request.content, 'html.parser')

# print(soup.prettify())

products = []

product_elements = soup.select('.s-main-slot .s-result-item')


for product in product_elements:

    title = product.select_one('h2 a span').get_text(strip=True) if product.select_one('h2 a span') else 'no Title'

    price = product.select_one('.a-price').get_text(strip=True).strip() if product.select_one('.a-price') else 'No price'

    products.append({

        'title': title,

        'price': price

    })


for product in products:

    print(f"Title: {product['title']} \nPrice: {product['price']}\n\n")
```

Output:

```
Title: no Title
Price: ₹15,999₹15,999


Title: no Title
Price: No price


Title: Redmi 13 5G, Black Diamond, 8GB+128GB | India Debut SD 4 Gen 2 AE | 1
08MP Pro Grade Camera | 6.79in Largest Display in Segment
Price: ₹14,999₹14,999


Title: iQOO Z9 5G (Graphene Blue, 8GB RAM, 128GB Storage) | Dimensity 7200 5
G Processor | Sony IMX882 OIS Camera | 120Hz AMOLED with 1800 nits Local Pea
k Brightness | 44W Charger in The Box
Price: ₹18,499₹18,499


Title: OnePlus Nord CE4 Lite 5G (Super Silver, 8GB RAM, 128GB Storage)
Price: ₹19,998₹19,998


Title: Motorola G64 5G (Ice Lilac, 12GB RAM, 256GB Storage) | Expandable Upt
o 2TB | Upto 24GB RAM with RAM Boost | 50MP (OIS) + 8MP | 16MP Front Camera
| MediaTek Dimensity 7025 Processor | 6000 mAh Battery
Price: ₹17,390₹17,390


Title: OnePlus Nord CE 3 Lite 5G (Chromatic Gray, 8GB RAM, 256GB Storage)
Price: ₹19,999₹19,999


Title: Tecno POVA 6 NEO 5G (Aurora Cloud, 8GB+256GB) | Advanced AI Features
| 108MP Ultra Clear AI Camera | D6300 Powerful Processor | 5 Year Lag Free F
luency | 5000 mAh Battery | in Built Infrared and NFC
Price: ₹13,999₹13,999


Title: Tecno POVA 6 NEO 5G (Aurora Cloud, 8GB+256GB) | Advanced AI Features
| 108MP Ultra Clear AI Camera | D6300 Powerful Processor | 5 Year Lag Free F
luency | 5000 mAh Battery | in Built Infrared and NFC
Price: ₹13,999₹13,999


Title: iQOO Z9 5G (Brushed Green, 8GB RAM, 128GB Storage) | Dimensity 7200 5
G Processor | Sony IMX882 OIS Camera | 120Hz AMOLED with 1800 nits Local Pea
k Brightness | 44W Charger in The Box
Price: ₹18,499₹18,499


Title: Samsung Galaxy M15 5G Prime Edition (Blue Topaz,6GB RAM,128GB Storag
e) | Super AMOLED Display| 50MP Triple Cam| 6000mAh Battery| MediaTek Dimens
ity 6100+ | 4 Gen. OS Upgrade & 5 Year Security Update
Price: ₹11,999₹11,999
```

Assignment-2 : Weather Report

Input:

```
import requests
import json


def get_weather_report():
    # API URL
    API_URL = "https://api.weatherapi.com/v1/current.json?key=0ffbc5c35b604366adb42044240210&q="

    # Get the city name from the user
    city_name = input("Enter City Name To Get Weather Report: ")

    # Append the city name to the API URL
    full_api_url = API_URL + city_name

    try:
        # Send the GET request
        response = requests.get(full_api_url)

        # Check if the request was successful (status code 200)
        if response.status_code == 200:
            # Parse the JSON response
            json_response = response.json()

            # Extract necessary fields from JSON response
            temperature = json_response['current']['temp_c']
            wind_speed = json_response['current']['wind_kph']
            description = json_response['current']['condition']['text']
            city = json_response['location']['name']
            state = json_response['location']['region']
            country = json_response['location']['country']

            # Print the formatted weather report
            print(f"Weather in ({city}, {state}, {country}):")
            print(f"Temperature: {temperature}°C")
            print(f"Wind Speed: {wind_speed} kph")
            print(f"Condition: {description}")
```

```
        else:
            print(f"Something went wrong... HTTP Status Code: {response.status_code}")

    except requests.exceptions.RequestException as e:
        # Handle connection errors or other exceptions
        print(f"An error occurred: {e}")

# Call the function to get weather report
get_weather_report()
```

Output:

In [1]:

```
import requests
import json

def get_weather_report():
    # API URL
    API_URL = "https://api.weatherapi.com/v1/current.json?key=0ffbc5c35b604366adb42044240210&q="

    # Get the city name from the user
    city_name = input("Enter City Name To Get Weather Report: ")

    # Append the city name to the API URL
    full_api_url = API_URL + city_name

    try:
        # Send the GET request
        response = requests.get(full_api_url)

        # Check if the request was successful (status code 200)
        if response.status_code == 200:
            # Parse the JSON response
            json_response = response.json()

            # Extract necessary fields from JSON response
            temperature = json_response['current']['temp_c']
            wind_speed = json_response['current']['wind_kph']
            description = json_response['current']['condition']['text']
            city = json_response['location']['name']
            state = json_response['location']['region']
            country = json_response['location']['country']

            # Print the formatted weather report
            print(f"Weather in ({city}, {state}, {country}):")
            print(f"Temperature: {temperature}°C")
            print(f"Wind Speed: {wind_speed} kph")
            print(f"Condition: {description}")

        else:
            print(f"Something went wrong... HTTP Status Code: {response.status_code}")

    except requests.exceptions.RequestException as e:
        # Handle connection errors or other exceptions
        print(f"An error occurred: {e}")

# Call the function to get weather report
get_weather_report()
```

```
Enter City Name To Get Weather Report: Mumbai
Weather in (Mumbai, Maharashtra, India):
Temperature: 27.4°C
Wind Speed: 11.2 kph
Condition: Moderate or heavy rain with thunder
```