BÀI TẬP THỰC HÀNH 4

Q21.

```
function BaiTapQ41()
    fprintf('\n Load du lieu train\n');

    load('imgTrainImagesAll.mat');
    load('lblTrainLabelsAll.mat');


    strMessage = 'Anh muon hien thi n: ';
    n = input(strMessage);

    figure;
    img = imgTrainImagesAll(:, n);
    img2D = reshape(img, 112, 92);
    strLabelImage = num2str(lblTrainLabelsAll(n));
    imshow(img2D);
    title(strLabelImage);
end
```

Q22.

```
function BaiTapQ42()
    fprintf('\n Load du lieu train\n');

    load('imgTestImagesAll.mat');
    load('lblTestLabelsAll.mat');

    strMessage = 'Anh muon hien thi n: ';
    n = input(strMessage);

    figure;
    img = imgTestImagesAll(:, n);
    img2D = reshape(img, 112, 92);
    strLabelImage = num2str(lblTestLabelsAll(n));
    imshow(img2D);
    title(strLabelImage);
end
```

Q23.

```
function BaiTapQ43()
    fprintf('\n Load du lieu train\n');
    load('imgTrainImagesAll.mat');
    load('lblTrainLabelsAll.mat');
    lblTrainLabelsAllCount = size(lblTrainLabelsAll, 2);
    index = 1;
    a = zeros(40);
    while index <= lblTrainLabelsAllCount
        label = lblTrainLabelsAll(index);
        a(label) = a(label) + 1;
        fprintf('%d\n', index);
        index = index + 1;
    end
    for i = 1 : 40
        fprintf('Label %d co %d anh. \n', i, a(i));
    end
end
```

Q24.

```
function BaiTapQ44()
    fprintf('\n Load du lieu train\n');
    load('C:\Users\tqkha\Desktop\imgTestImagesAll.mat');
    load('C:\Users\tqkha\Desktop\lblTestLabelsAll.mat');
    lblTestLabelsAllCount = size(lblTestLabelsAll, 2);
    index = 1;
    a = zeros(40);
    while index <= lblTestLabelsAllCount
        label = lblTestLabelsAll(index);
        a(label) = a(label) + 1;
        fprintf('%d\n', index);
        index = index + 1;
    end
    for i = 1 : 40
        fprintf('Label %d co %d anh. \n', i, a(i));
    end
end
```

Q25.

```
function BaiTapQ45()
    fprintf('\n Load du lieu train');
    load('imgTrainImagesAll.mat');
    load('lblTrainLabelsAll.mat');

    Mdl = fitcknn(imgTrainImagesAll', lblTrainLabelsAll);

    fprintf('\n Load du lieu test \n');
    load('imgTestImagesAll.mat');
    load('lblTestLabelsAll.mat');

    strMessage = 'Anh muon du doan n: ';
    n = input(strMessage);

    imgTest = imgTestImagesAll(:,n);
    lblPredictTest = predict(Mdl, imgTest');

    fprintf('Label: %d. \n', lblPredictTest);;
end
```

Q26.

```
function BaiTapQ46()
   fprintf('\n Load du lieu train');
    load('imgTrainImagesAll.mat');
    load('lblTrainLabelsAll.mat');

    Mdl = fitcknn(imgTrainImagesAll', lblTrainLabelsAll);

    fprintf('\n Load du lieu test \n');
    load('imgTestImagesAll.mat');
    load('lblTestLabelsAll.mat');

    strMessage = 'Anh muon du doan n: ';
    n = input(strMessage);

    imgTest = imgTestImagesAll(:,n);
```

```
    lblPredictTest = predict(Mdl, imgTest');

    figure;
    img = imgTestImagesAll(:, n);
    img2D = reshape(img, 112, 92);
    strLabelImage = num2str(lblTestLabelsAll(n));
    imshow(img2D);

    caption = ['Label: ', strLabelImage, ' | Predict: ',
num2str(lblPredictTest)];

    if(lblTestLabelsAll(n) == lblPredictTest)
        caption = [caption, ' ~ KHOP'];
    else
        caption = [caption, ' ~ KHONG KHOP'];
    end

    title(caption);
end
```

Q27.

```
function BaiTapQ47()
    fprintf('\n Load du lieu train');
    load('C:\Users\tqkha\Desktop\imgTrainImagesAll.mat');
    load('C:\Users\tqkha\Desktop\lblTrainLabelsAll.mat');

    Mdl = fitcknn(imgTrainImagesAll', lblTrainLabelsAll);

    fprintf('\n Load du lieu test \n');
    load('C:\Users\tqkha\Desktop\imgTestImagesAll.mat');
    load('C:\Users\tqkha\Desktop\lblTestLabelsAll.mat');

    lblTestAllCount = size(lblTestLabelsAll, 1);

    strMessage = 'Anh muon du doan n: ';
    n = input(strMessage);

    index = 1;
    FailedTestRecognitionCount = 0;

    while index ~= lblTestAllCount
        if(lblTestLabelsAll(index) == n)
            imgTest = imgTrainImagesAll(:,index);
            lblPredictTest = predict(Mdl, imgTest');

            if(lblPredictTest ~= n)
                FailedTestRecognitionCount = FailedTestRecognitionCount +
1;
            end
        end

        index = index + 1;
    end

    fprintf('So luong anh sai: %d. \n', FailedTestRecognitionCount);
end
```

Q27*.

```
function BaiTapQ47x()
    a = zeros(40, 40);

    fprintf('\n Load du lieu train');
    load('imgTrainImagesAll.mat');
    load('lblTrainLabelsAll.mat');

    Mdl = fitcknn(imgTrainImagesAll', lblTrainLabelsAll);

    fprintf('\n Load du lieu test \n');
    load('imgTestImagesAll.mat');
    load('lblTestLabelsAll.mat');

    for index = 1:120
        imgTest = imgTestImagesAll(:,index);
        lblPredictTest = predict(Mdl, imgTest');

        if(lblPredictTest ~= lblTestLabelsAll(index))
            a(lblTestLabelsAll(index), lblPredictTest) =
a(lblTestLabelsAll(index), lblPredictTest) + 1;
        end
    end

    disp(a);
end
```

Q28.

```
function BaiTapQ48()
    fprintf('\n Load du lieu train');
    load('imgTrainImagesAll.mat');
    load('lblTrainLabelsAll.mat');

    Mdl = fitcknn(imgTrainImagesAll', lblTrainLabelsAll);

    fprintf('\n Load du lieu test \n');
    load('imgTestImagesAll.mat');
    load('lblTestLabelsAll.mat');

    lblTestAllCount = size(lblTestLabelsAll, 2);

    fprintf('\nPredicting... ');

    lblPredictTest = predict(Mdl, imgTestImagesAll');
    count = (lblPredictTest' == lblTestLabelsAll);

    Accuracy = sum(count) / lblTestAllCount;

    fprintf('Do chinh xac: %f8.3. \n', Accuracy);
end
```