

BÀI TẬP THỰC THÀNH 3

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Q1/

```
function TH3_Q1()
    strMessage = '\nNhap n: ';
    n = input(strMessage);
    fprintf('\nLoad du lieu train');
    imgTrainAll = loadMNISTImages('./train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('./train-labels.idx1-ubyte');
    figure;
    img = imgTrainAll(:,n);
    img2D = reshape(img,28,28);
    strLabelImage = num2str(lblTrainAll(n));
    imshow(img2D);
    title(strLabelImage);
end
```

n	1	500	5000	10000	59000
numb	5	8	2	7	4

Q2/

```
function TH3_Q2()
    strMessage = '\nNhap n: ';
    n = input(strMessage);
    fprintf('\nLoad du lieu test');
    imgTestAll = loadMNISTImages('./t10k-images.idx3-ubyte');
    lblTestAll = loadMNISTLabels('./t10k-labels.idx1-ubyte');
    figure;
    img = imgTestAll(:,n);
    img2D = reshape(img,28,28);
    strLabelImage = num2str(lblTestAll(n));
    imshow(img2D);
    title(strLabelImage);
end
```

n	1	500	5000	9000
numb	7	6	0	0

Q3/

```
function TH3_Q3()
    fprintf('\nLoad du lieu train');
    imgTrainAll = loadMNISTImages('./train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('./train-labels.idx1-ubyte');

    a = zeros(1,10);
    for i = 1:size(imgTrainAll,2)
        a(1,lblTrainAll(i)+1) = a(1,lblTrainAll(i)+1) + 1;
    end
end
```

0	1	2	3	4	5	6	7	8	9
5923	6742	5958	6131	5842	5421	5918	6265	5851	5949

Q4/

```
function TH3_Q4()
    fprintf('\nLoad du lieu test');
    imgTestAll = loadMNISTImages('./t10k-images.idx3-ubyte');
    lblTestAll = loadMNISTLabels('./t10k-labels.idx1-ubyte');

    a = zeros(1,10);
    for i = 1:size(imgTestAll,2)
        a(1,lblTestAll(i)+1) = a(1,lblTestAll(i)+1) + 1;
    end
end
```

0	1	2	3	4	5	6	7	8	9
980	1135	1032	1010	982	892	958	1028	974	1009

Q5/

```
function [strLabelImage] = TH3_Q5(n)
    imgTrainAll = loadMNISTImages('train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('train-labels.idx1-ubyte');
    Mdl = fitcknn(imgTrainAll',lblTrainAll);

    imgTestAll = loadMNISTImages('t10k-images.idx3-ubyte');
    imgTest = imgTestAll(:,n);
    lblPredictTest = predict(Mdl,imgTest');

    strLabelImage = num2str(lblPredictTest);
end
```

N	5	500	900
numb	4	6	8

Q6/

```
function TH3_Q6(n)
    imgTestAll = loadMNISTImages('t10k-images.idx3-ubyte');
    lblTestAll = loadMNISTLabels('t10k-labels.idx1-ubyte');

    imgTest = imgTestAll(:,n);
    lblImageTest = lblTestAll(n);
    figure;
    img2D = reshape(imgTest,28,28);
    imshow(img2D);
    strLabelImage = 'Ban dau ';
    strLabelImage = [strLabelImage,num2str(lblImageTest),'.'];
    strLabelImage = [strLabelImage,' Du doan: '];
    strLabelImage = [strLabelImage,num2str(TH3_Q5(n)),'.'];

    if(num2str(TH3_Q5(n)) == num2str(lblImageTest))
        strLabelImage = [strLabelImage,' Ket qua dung.'];
    else
        strLabelImage = [strLabelImage,' Ket qua sai.'];
    end
    title(strLabelImage);
end
```

Q7/

```
function TH3_Q7()
    nNumber = 1;
    right = 0;
    wrong = 0;
    while(nNumber <= 10000)
        lblTestAll = loadMNISTLabels('t10k-labels.idx1-ubyte');

        lblImageTest = lblTestAll(nNumber);

        if(num2str(TH3_Q5(nNumber)) == num2str(lblImageTest))
            right = right + 1;
        else
            wrong = wrong + 1;
        end
        nNumber = nNumber + 1;
    end
    fprintf('\nSo anh nhan dang dung: [%d].',right);
    fprintf('\nSo anh nhan dang sai: [%d].',wrong);
end
```

