1. Tạo tài khoản trên github

https://github.com/khaiphanvan/VRA

2. Thông tin học viên

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3. Gõ lại bài tập thực hành đã phát trong tài liệu:

Lecture 01

```
function Example001()
    a=rand();
    fprintf('\n ...:[%8.3f]',a);
    r=randi([1 10]);
    fprintf('\n ...:[1 10]: [%d]',r);
    rArray = randi([-10 10],1,10);
    fprintf('\n ...:[%d]',size(rArray,2));
    fprintf('\n Mang duoc tao ra la: ');
    fprintf('[%2d]',rArray);
end
function Example002()
    strMessage='\nNhap m:';
    m=input(strMessage);
    strMessage='\nNhap n:';
    n=input(strMessage);
    a=ones(m,n);
    b=zeros(m,n);
    c=eye(m,n);
    d=randi([-10,10],m,n);
    a(1,1)=5;
```

```
    e=size(a);
end
function Example003()
    strMessage='\nNhap n:';
    n=input(strMessage);
    s=0;
    i=1;
    while i<=n
        s=s+i;
        i=i+1;
    end
    fprintf('n Tong S=1+2+3+..+%d la: %d\n',n,s);
end
function Example004()
    strMessage='\nNhap n:';
    n=input(strMessage);
    s=0;
    for i=1:n
        s=s+i;
    end
    fprintf('n Tong S=1+2+3+..+%d la: %d\n',n,s);
end
function primeArray = findNPrime(n)
    count=0;
    i=2;
    primeArray=[];
    while (count<n)
```

```
        if(isPrime(i)==1)
            count=count+1;
            primeArray=[primeArray,i];
        end
        i=i+1;
    end
end
function m = isPrime(n)
    count = 0;
    for i=1:n
        if(mod(n,i)==0)
            count=count+1;
        end
    end
    m=(count==2);
end
function loadNPrime(n)
    strFileName = ['prime',num2str(n),'.mat'];
    load(strFileName);
    rArray;
end
function saveNPrime(n)
    rArray = findNPrime(n);
    strFileName = ['prime',num2str(n),'.mat'];
    save(strFileName,'rArray');
end
```

Lecture 02

```
function Recognition001_Digits()
    fprintf('\n Load du lieu train');
    imgTrainAll = loadMNISTImages('train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('train-labels.idx1-ubyte');
    fprintf('\n Load du lieu test');
    imgTestAll = loadMNISTImages('t10k-images.idx3-ubyte');
    lblTestAll = loadMNISTLabels('t10k-labels.idx1-ubyte');
    fprintf('\n Ket thuc.');
end
function Recognition002_Digits()
    fprintf('\n Load du lieu train');
    imgTrainAll = loadMNISTImages('train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('train-labels.idx1-ubyte');
    fprintf('\n Load du lieu test');
    imgTestAll = loadMNISTImages('t10k-images.idx3-ubyte');
    lblTestAll = loadMNISTLabels('t10k-labels.idx1-ubyte');

    nTrainImages = size(imgTrainAll,2);
    nTrainLabels = size(lblTrainAll,1);

    nTestImages = size(imgTestAll,2);
    nTestLabels = size(lblTestAll,1);

    nSizeofImage = size(imgTrainAll,1);

    fprintf('\n So luong anh train: [%d]',nTrainImages);
```

```
    fprintf('\n So luong label anh train: [%d]',nTrainLabels);

    fprintf('\n So luong anh test: [%d]',nTestImages);
    fprintf('\n So luong label anh test: [%d]',nTestLabels);

    fprintf('\n Kich thuoc cua mot anh: [%d]',nSizeofImage);
end
function Recognition003_Digits()
    fprintf('\n Load du lieu train');
    imgTrainAll = loadMNISTImages('train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('train-labels.idx1-ubyte');
    fprintf('\n Load du lieu test');
    imgTestAll = loadMNISTImages('t10k-images.idx3-ubyte');
    lblTestAll = loadMNISTLabels('t10k-labels.idx1-ubyte');

    nTrainImages = size(imgTrainAll,2);
    figure;
    img = imgTrainAll(:,1);
    img2D = reshape(img,28,28);
    strLabelImage=num2str(lblTrainAll(1));
    imshow(img2D);
    title(strLabelImage);

    figure;
    imgLast = imgTrainAll(:,nTrainImages);
    img2DLast = reshape(imgLast,28,28);
    strLabelImage=num2str(lblTrainAll(nTrainImages));
```

```
    imshow(img2DLast);
    title(strLabelImage);
end
function Recognition004_Digits()
    fprintf('\n Load du lieu train');
    imgTrainAll = loadMNISTImages('train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('train-labels.idx1-ubyte');
    fprintf('\n Load du lieu test');
    imgTestAll = loadMNISTImages('t10k-images.idx3-ubyte');
    lblTestAll = loadMNISTLabels('t10k-labels.idx1-ubyte');

    nTrainImages = size(imgTrainAll,2);
    nNumber = randi([1 nTrainImages]);

    figure;
    img = imgTrainAll(:,nNumber);
    img2D = reshape(img,28,28);
    strLabelImage=num2str(lblTrainAll(nNumber));
    imshow(img2D);
    title(strLabelImage);

    nTestImages = size(imgTestAll,2);
    nNumber = randi([1 nTestImages]);

    figure;
    img = imgTestAll(:,nNumber);
    img2D = reshape(img,28,28);
```

```
    strLabelImage=num2str(lblTestAll(nNumber));
    imshow(img2D);
    title(strLabelImage);
end
function Recognition005_Digits()
    imgTrainAll = loadMNISTImages('train-images.idx3-ubyte');
    lblTrainAll = loadMNISTLabels('train-labels.idx1-ubyte');
    Mdl = fitcknn(imgTrainAll',lblTrainAll);

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

    nTestImages = size(imgTestAll,2);
    nNumber = randi([1 nTestImages]);

    imgTest = imgTestAll(:,nNumber);
    lblPredictTest = predict(Mdl, imgTest');

    lblImageTest = lblTestAll(nNumber);

    figure;
    img2D = reshape(imgTest,28,28);
    imshow(img2D);

    strLabelImage = 'Ban dau ';
    strLabelImage = [strLabelImage, num2str(lblTestAll(nNumber)),'.'];
    strLabelImage = [strLabelImage, 'Du doan: '];
```

```
    strLabelImage = [strLabelImage, num2str(lblPredictTest),'.'];

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