BÀI TẬP THỰC HÀNH 1

THIẾT LẬP MÔI TRƯỜNG

- Họ và Tên: **Phạm Thị Hồng Nhung**
- MSSV: **CH1701005**
- Đường dẫn tài khoản Github: **https://github.com/hongnhung1986**
- Gõ lại bài thực hành (matlab) đã được phát trong tài liệu:

Các ví dụ ngày 18/09/2017:

- **Ví dụ 1:**

```
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 la: ');
    fprintf('[%2d]', rArray);
end
```

- **Ví dụ 2:**

```
function Example002()
    strMessage='\n Nhap m: ';
    m=input(strMessage);
    strMessage='\n Nhap 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
```

- **Ví dụ 3:**

```
function Example003()
    strMessage='\n Nhap 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
```

- **Ví dụ 4:**

```
function Example004()
    strMessage='\n Nhap 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
```

- **Hàm kiểm tra nguyên tố:**

```
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
```

- **Hàm tìm n số nguyên tố đầu tiên:**

```
function m=isprime(n)
    count=0;
    for i=1:n
        if(mod(n,i)==0
            count=count+1;
        end
    end
    m=(count==2);
end
```

- **Hàm lưu n số nguyên tố:**

```
function loadprime(n)
    strFilName=['prime',num2str(n),'.mat'];
    load(strFileName);
    rArray
end
```

- **Hàm nạp n số nguyên tố từ file:**

```
function savenprime(n)
    rArray=findnprime(n);
    strFileName=['prime',num2str(n),'.mat'];
    save(strFilName,'rArray');
end
```

Các bài tập ngày 25/09/2017:

- **Vấn đề 1:**

```
function Recognition001_Digits()
    fprintf('\n Load du lieu train');
    imgTrainAll=loadMNISTImages('./train-images.idx3-ubyte');
    lblTrainAll=loadMINSTLabels('./train-labels.idx1-ubyte');
    fprinf('\n Load du lieu test');
    imgTestAll=loadMNISTImages('./t10k-images.idx3-ubyte');
    lblTestAll=loadMNISTLabels('./ti0k-labels.idx1-ubyte');
    fprintf('\n Ket thuc. \n');
end
```

- **Vấn đề 2:**

```
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');
    fprintf('\n Ket thuc. \n');

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

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

    nSizeofImages=size(imgTrainAll,1);

    fprintf('So luong anh train: [%d].',nTrainImages);
    fprintf('So luong nhan anh train: [%d].',nTrainLabels);
    fprintf('So luong anhr test: [%d].',nTestImages);
    fprintf('So luong nhan anh test: [%d].',nTestLabels);
    fprintf('Kich thuoc cua mot anh: [%d].',nSizeofImages);
end
```

- **Vấn đề 3:**

```
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);%reshape
    strLabelImage=num2str(lblTrainAll(1));
    imshow(img2D); % show image
    title(strLabelImage);
    figure;
```

```
    imgLast=imgTrainAll(:,nTrainImages);
    img2DLast=reshape(imgLast,28,28);
    strLabelImage=num2str(lblTrainAll(nTrainImages));
    imshow(img2DLast); % show image
    title(strLabelImage);
end
```

- **Vấn đề 4:**

```
function Recognition004_Digits()
    imgTrainAll=loadMNISTImages('./train-images.idx3-ubyte');
    lblTrainAll=loadMNISTLabels('./train-labels.idx1-ubyte');
    imgTestAll=loadMNISTImages('./t10k-images.idx3-ubyte');
    lblTestAll=loadMNISTLabels('./t10k-labels.idx1-ubyte');
    nTrainImages=size(imgTestAll,2);
    nNumber=randi([1 nTrainImages]);
    figure;
    img=imgTrainAll(:, nNumber);
    img2D=reshape(img,28,28);
    strLabelImage=num2str(lblTrainAll(nNumber));
    strLabelImage=[strLabelImage,'(',num2str(nNumber),')'];
    imshow(img2D);
    title(strLabelImage);
    nTestImgs=size(imgTestAll,2);
    nNumber=randi([1 nTestImgs]);
    figure;
    img=imgTestAll(:,nNumber);
    img2D=reshape(img,28,28);
    strLabelImage=num2str(lblTestAll(nNumber));
    strLabelImage=[strLabelImage,'(',num2str(nNumber),')'];
    imshow(img2D);
    title(strLabelImage);
end
```

- **Vấn đề 5:**

```
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');
    nTestImgs=size(imgTestAll,2);
    nNumber=randi([1 nTestImgs]);

    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)
        strLabelImge=[strLabelImage,'Ket qua dung.'];
    else
```

```
        strLabelImge=[strLabelImage,'Ket qua sai.'];
    title(strLabelImage);
end
```

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