Contents

I. 清空环境变量及命令

```
clear all
clc
```

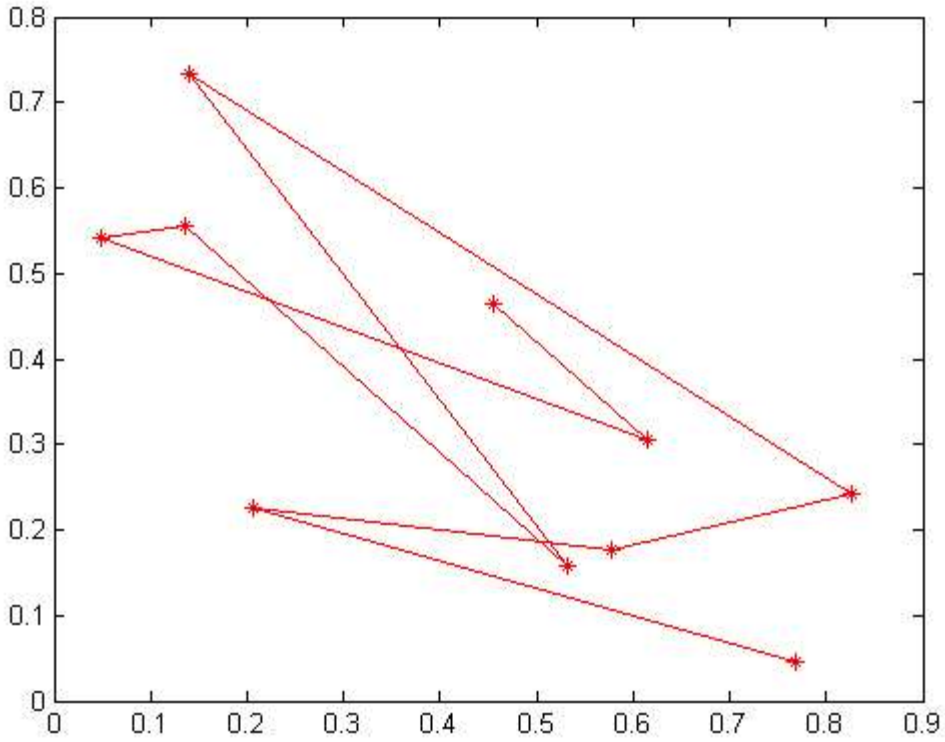
II. MATLAB编程习惯与风格

```
x_coordinate = rand(1,10);
y_coordinate = rand(1,10);
figure
plot(x_coordinate,y_coordinate,'r-*')

% %% III. MATLAB程序调试
% %%
% % 1. Index must be a positive integer or logical.
% A = [1 2 3 4 5];
% A(0)
% A(3.5)
% A(-2)
%
% %%
% % 2. Undefined function or variable 'B'.
% B
%
% %%
% % 3. Inner matrix dimensions must agree.
% B = [1 2 3];
% A * B
%
% %%
% % 4. Function definitions are not permitted at the prompt or in scripts.
% % function c = add(a,b)
% % c = a + b;
%
% %%
% % 5. Index out of bounds because numel(A)=5.
% A(6)
%
% %%
% % 6. In an assignment  A(I) = B, the number of elements in B and I must be the same.
% A(3) = B;
%
% %%
% % 7. Expression or statement is incorrect--possibly unbalanced (, {, or [.
% % mean(A(1:3)
%
% %%
% % 8. Too many input arguments.
% mean(A,1,2)
%
% %%
% % 9. 循环体的调试
% a = 1:100;
% b = [];
% for i = 1:21
%     index = 105 - 5*i;
```

```
%     b = [b a(index)];
% end
%
% %%
% % 10. 查看、编辑MATLAB自带的工具箱函数
% edit mean
%
% edit newff

% %% III. MATLAB内存优化配置
% feature memstats
%
% %% IV. 向量化编程
% %%
% % 1. 及时清除不用的变量
% a = rand(10000);
% b = rand(10000);
% clear a
% b = rand(10000);
%
% %%
% % 2. 使用变量前，预分配内存空间
% clear all
% clc
% n = 30000;
% tic;
% for k = 1:n
%     a(k) = 1;
% end
% time = toc;
% disp(['未预分配内存下动态赋值长为',num2str(n),'的数组时间是:',num2str(time),'秒！'])
%
% tic
% b = zeros(1,n);
% for k = 1:n
%     b(k) = 1;
% end
% time = toc;
% disp(['预分配内存下动态赋值长为',num2str(n),'的数组时间是:',num2str(time),'秒！'])
%
% %%c
% % 3. 选择恰当的数据类型
% clear all
% clc
% n = 300000;
% a = 8;
% b{1} = 8;
% c.data = 8;
%
% tic
% for k = 1:n;
%     a;
% end
% time = toc;
% disp(['访问',num2str(n),'次double型数组时间是:',num2str(time),'秒！'])
%
% tic
% for k = 1:n;
%     b{1};
% end
% time = toc;
% disp(['访问',num2str(n),'次cell型数组时间是:',num2str(time),'秒！'])
%
% tic
% for k = 1:n;
```

```
%     c.data;
% end
% time = toc;
% disp(['访问',num2str(n),'次struct型数组时间是:',num2str(time),'秒! '])
%
% %%
% % 4. 按列优先循环
% clear all
% clc
% n = 1000;
% a = rand(n);
% tic
% for i = 1:n
%     for j = 1:n
%         a(i,j);
%     end
% end
% toc
%
% for i = 1:n
%     for j = 1:n
%         a(j,i);
%     end
% end
% toc
%
% %%
% % 5. 循环次数多的变量安排在内层
% clear all
% clc
% tic
% a = 0;
% for i = 1:1000
%     for j = 50000
%         a = a + 1;
%     end
% end
% toc
%
% tic
% a = 0;
% for i = 1:50000
%     for j = 1:1000
%         a = a + 1;
%     end
% end
% toc
%
% %%
% % 6. 给一些函数“瘦身”
% % edit mean
% clear all
% clc
% a = rand(1,10000);
% tic
% b = mean(a)
% toc
%
% tic
% c = sum(a)/length(a)
% toc
%
% %% V. 图像对象和句柄
% %%
% % 1. 如何设置线条的属性呢？
```

```
% x = 0:0.01:2*pi;
% y = sin(x);
% h = plot(x,y);
% grid on
% get(h)
% set(h,'linestyle',':','linewidth',5,'color','b')
%
% %%
% % 2. 如何修改网格的间隔呢？
% set(gca,'xtick',0:0.5:7)
%
% %%
% % 3. 如何设置图例的字体及大小呢？
% x = 0:0.01:2*pi;
% y1 = sin(x);
% y2 = cos(x);
% plot(x,y1,'r')
% hold on
% plot(x,y2,'-.b')
% h = legend('sin(x)','cos(x)');
% set(h,'fontsize',16,'color','k','edgecolor','r','textcolor','w')
%
% %%
% % 4. 如何拆分图例呢？
% x = 0:0.01:2*pi;
% y1 = sin(x);
% y2 = cos(x);
% h1 = plot(x,y1,'r');
% hold on
% h2 = plot(x,y2,'-.b');
% ax1 = axes('position',get(gca,'position'),'visible','off');
% legend(ax1,h1,'sin(x)','location','northwest')
% ax2 = axes('position',get(gca,'position'),'visible','off');
% legend(ax2,h2,'cos(x)','location','northeast')
```



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