Status Report:
Matlab Exercises 1

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Overview

The exercise consists of these files:

calAP.m / Calculate_Ap.m / Calculate_Volume.m / calVolume.m / Plot.m

All of the questions was solved by involving all three members of the group.

Answers was made through MATLAB V2015, so additional files were needed for making functions. (functions are linked to parent files)

In files Calculate_AP.m, Calculate_Volume.m, Plot.m we test and print out all the possibilities.

Exercise 1.2

calAP.m function

```
function [perimeters, areas] = calAP(a,b)
    perimeters = zeros(1,length(b));
    areas = zeros(1,length(b));
    for  i=1: length(b)
        if strcmp(a ,'circle')
            perimeters(i) = (2*pi*b(i));
            areas(i) = (pi*b(i)*b(i));
        elseif strcmp(a,'triangle')
            areas(i) = (sqrt(3)*b(i)*b(i)/4);
            perimeters(i) = (3*b(i));
        elseif strcmp(a, 'pentagon')
            areas(i) = (b(i)*b(i)*5/4*tan(0.942478));
            perimeters(i) = (5*b(i));
        elseif strcmp(a, 'hexagon')
            areas(i) =(b(i)*b(i)*3/2*sqrt(3));
            perimeters(i) =  (6*b(i));
        end
    end
end
```

Exercise 1.2

Calculate_AP.m (part 1)

```
disp('circle: side = N/A ,radius = any ');
shape = 'circle';
s = [3,4,5];
[a,b] = calAP(shape, s);
disp('perimeters : ');
disp(a);
disp('areas : ');
disp(b);
disp('######################');
disp('triangle: side = [3,4,5], radius = N/A');
shape = 'triangle';
s = [3,4,5];
[a,b] = calAP(shape, s);
disp('perimeters : ');
disp(a);
disp('areas : ');
disp(b);
disp('######################');
disp('regular pentagon: side = 6');
shape = 'pentagon';
```

Calculate_AP.m (part 2)

```
s = (6);
[a,b] = calAP(shape, s);
disp('perimeters : ');
disp(a);
disp('areas : ');
disp(b);
disp('######################');
disp('regular hexagon: side = 6');
shape = 'hexagon';
s = (6);
[a,b] = calAP(shape, s);
disp('perimeters : ');
disp(a);
disp('areas : ');
disp(b);
```

Exercise 1.3

Calculate_AP.m Output

```
>> Calculate_AP
circle: side = N/A ,radius = any
perimeters :
   18.8496   25.1327   31.4159

areas :
   28.2743   50.2655   78.5398

######################
triangle: side = [3,4,5], radius = N/A
perimeters :
     9    12    15

areas :
    3.8971    6.9282   10.8253

######################
regular pentagon: side = 6
perimeters :
    30

areas :
   61.9372

######################
regular hexagon: side = 6
perimeters :
    36

areas :
   93.5307
```

Exercise 1.4

CalVolume Function

```
function volumes = calVolume(a,b)
volumes = zeros(1,length(b));
for  i=1: length(b)
    if strcmp(a, 'sphere')
        volumes(i) = (4/3*pi*b(i)*b(i)*b(i));
    elseif strcmp(a, 'cylinder')
        Qdbl = cat(1,b{:});
        volumes(i) = (pi*Qdbl(i,1)*Qdbl(i,1)*Qdbl(i,2));
    elseif strcmp(a, 'right cone')
        Qdbl = cat(1,b{:});
        volumes(i) = (pi*Qdbl(i,1)*Qdbl(i,1)*Qdbl(i,2)/3);
    elseif strcmp(a, 'cube')
        volumes(i) =  (b(i)*b(i)*b(i));
    end
end
end

```

Calculate_Volume.m

```
disp('sphere radius = 3.5');
shape = 'sphere';
s = [3.5];
[a] = calVolume(shape, s);
disp('valumes : ' + a);
disp('########################');
disp('cylinder radius = 2.5; height = 10');
shape = 'cylinder';
s = {[2.5,10]};
[a] = calVolume(shape, s);
disp('valumes : ' + a);
disp('########################');
disp('right cone: base circle radius = 4; height = 6');
shape = 'right cone';
s = {[4,6]};
[a] = calVolume(shape, s);
disp('valumes : ' + a);
disp('########################');
disp('cube: side length = 4');
shape = 'cube';
s = [4];
[a] = calVolume(shape, s);
disp('valumes : ' + a);

```

Exercise 1.5

Calculate_Volume.m Output

```
>> Calculate_Volume
sphere radius = 3.5
  297.5944  276.5944  287.5944  296.5944  288.5944  280.5944  294.5944  211.5944  237.5944  211.5944

######################
cylinder radius = 2.5; height = 10
  314.3495  293.3495  304.3495  313.3495  305.3495  297.3495  311.3495  228.3495  254.3495  228.3495

######################
right cone: base circle radius = 4; height = 6
  218.5310  197.5310  208.5310  217.5310  209.5310  201.5310  215.5310  132.5310  158.5310  132.5310

######################
cube: side length = 4
   182   161   172   181   173   165   179    96   122    96
```

Exercise 1.6

Plot.m (part 1)

```
clear,clc
figure
% add your own matlab code here:
% plot four different figures on one graph by using the subplot function:
% ========================================================================
% subplot 1: plot a cylinder, the graph function is provided, you just have
% to add the subplot command by replacing the following line:
subplot(2,2,1)
cylinder
title('Subplot 1: cylinder')
% ========================================================================
% ========================================================================
% subplot 2: plot a sphere, the graph function is provided, you just have
% to add the subplot command by replacing the following line:
subplot(2,2,2)
sphere
title('Subplot 2: sphere')
% ========================================================================
% ========================================================================
% subplot 3: plot a ellipsoid, the graph function is provided, you just hav
```

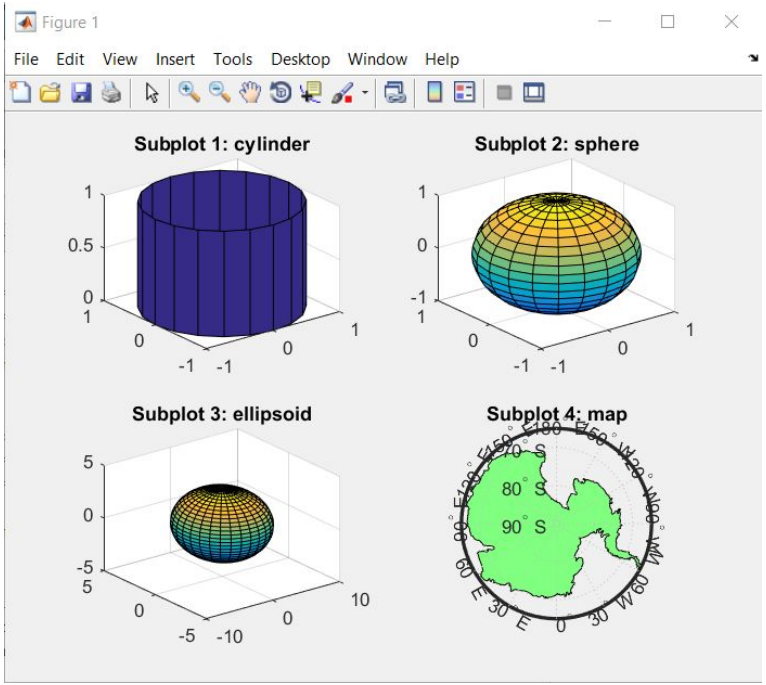
Plot.m (part 2)

```
% to add the subplot command by replacing the following line:
subplot(2,2,3)
ellipsoid(0,0,0,5.9,3.25,3.25,30)
title('Subplot 3: ellipsoid')
% ========================================================================
% ========================================================================
% subplot 4: plot a map, the graph function is provided, you just have
% to add the subplot command by replacing the following line:
subplot(2,2,4)
worldmap('antarctica')
antarctica = shaperead('landareas', 'UseGeoCoords', true,...
  'Selector',{@(name) strcmp(name,'Antarctica'), 'Name'});
patchm(antarctica.Lat, antarctica.Lon, [0.5 1 0.5])
title('Subplot 4: map')
% ========================================================================

```

Exercise 1.6

Plot.m Output



Summary

What did we learn?

1) Matlab syntaxes. Specially for functions and for and if.
2) How to debug our program in MATLAB.
3) How to make functions in separate files and link files together.
4) Searching MATLAB forums for resolving issues