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Lecture Overview

- How to save an m-file, diary command, how to submit work,
- http://www.udel.edu/CIS/106/cavazos/09S/ labs/lab01.html
- Key points: concept of a function, importance of functions, m-files, comments with % sign,



MATLAB

- Ok, so now I have to calculate the area of 7000 circles
- >> area = pi * 0.7 * 0.7
- >> area = pi * 9 * 9
- >> area = pi * radius^2
- Etc.
- Wouldn't it be better to save the equation and input only one value (the radius) ?
- Solution is functions



Functions

- Top-down program design (pp. 87-90)
- Breaking problems down
- Code reuse (Don't reinvent the wheel)
- How do we write functions in MATLAB?

Sample function circleArea

function outputValue = circleArea(radius) outputValue = pi * radius ^ 2;

MATLAB m-files overview

- MATLAB script files are also known as mfiles
- They end in .m file extension
- You can use the m file by typing the name of the m-file (without the .m extension)



MATLAB m-files

- Create a circleArea m-file
- How to save a file

Sample M-file circleArea.m to enter

%circleArea.m
%John Cavazos, 2/13/2009
%Description: calculates the area of a circle
given the radius
function outputValue = circleArea(radius)
outputValue = pi * radius ^ 2;

Now, what if we want to calculate area of a ring

- A ring of two concentric circles
- we can use our circleArea function



Area of a ring

• pi * (radius1)^2 – pi * (radius2)^2

%Description: calculates the area of a ring given outer radius_I and inner radius_2 function outputValue = ringArea(radius_I, radius_2) outputValue = circleArea(radius_I) circleArea(radius_2);



Test area of a ring

- ringArea(2,1)
- ringArea(3,1)
- Etc.