

## Basic Programming Examples

Program	Description	Matlab Commands
A00.m	<b><i>Hello World</i></b> – Super simple program prints “Hello World” to command window	<code>disp()</code>
A01.m	<b><i>Hello World (Fancy Version)</i></b> – Same as A00.m except it includes extra housekeeping functions <code>clc</code> , <code>clear</code> , and <code>close</code> recommended for all your programs.	<code>clc, clear, close</code>
A02.m	<b><i>Period of a Pendulum</i></b> – Example code demonstrates prompting user for input and displaying text and numbers to the command window.	<code>input()</code> <code>fprintf()</code>
A03.m	<b><i>Calculate Fine Structure Constant</i></b> – Demonstrates how to read in a <code>.mat</code> file containing pre-defined variables using the <code>load()</code> command.	<code>load()</code>
A04.m	<b><i>Summation</i></b> – Demonstrates how to use a <code>for</code> loop to sum some integers.	<code>for</code> loop
A04B.m A04C.m	<b><i>Nested For Loops</i></b> – Two examples of nesting one <code>for</code> loop inside another.	nested <code>for</code> loops
A05.m	<b><i>Taylor Series of cos x</i></b> – Example code uses a <code>for</code> loop to sum a fixed number of terms in a Taylor series.	<code>for</code> loop
A06A.m A06B.m A06C.m	<b><i>Optimization</i></b> – Three examples of how to optimize computational performance for a simple example of calculating $\sin(x)$ at 100 million values. Computational time is measured using <code>tic</code> and <code>toc</code> .	<code>for</code> loop <code>tic, toc</code> <code>sum()</code>
A07.m	<b><i>Calculation of pi</i></b> – Uses a <code>while</code> loop to approximate $\pi$ to a desired precision.	<code>while</code> loop
A08.m	<b><i>if Statements</i></b> – Simple example demonstrating the use of an <code>if-else</code> statement.	<code>if</code> statement
A09.m	<b><i>Calculation of pi</i></b> – same as program A07.m except that it uses a <code>for</code> loop with a <code>break</code> command rather than a <code>while</code> loop.	<code>for</code> loop <code>break</code>
A10.m	<b><i>Prime Numbers</i></b> – search for first N prime numbers by combining a <code>while</code> and <code>if</code> statements.	<code>while</code> loop <code>if</code> statement
A11A.m A11B.m	<b><i>Reading Data File with Planetary Orbits</i></b> – Demonstrates two methods of reading a data file using the <code>load()</code> and <code>textread()</code> commands.	<code>load()</code> <code>textread()</code>

### Supporting Files:

constants.mat	File containing pre-defined fundamental constants
planetsA.txt	Data file containing orbital data on all known planets in our solar system
planetsB.txt	Same as above, except this file contains the names of the planets and a header line