- Array = sumAndProduct(3, 5);
  Disp(array(1));
  Disp(array(2));
  ```
  Function array = sumAndProduct(a, b)
      array(1) = a + b;
      array(2) = a*b;
  end
  ```
- Parameters are the input to a function
  - There can be 0, 1 or more parameters
- Returned values are the output of a function
  - There can be no returned values, or there can be 1
  - To return more than 1, put it in an array
- Parameters and returned values do NOT have to be the same
- Almost always, its better to return a value instead of printing
  - Your function should not print anything unless specifically asked
- When Matlab reaches the **return** keyword, it gets out of the function immediately

Lecture 7.1

- Global variables are variables that can be seen in all files/functions
  - Useful if the variable stores data that needs to be used heaps
  - Contains a lot of data
- global c;
  c = 300000000;
  disp(c);
- This indicates that 'c' is a global variable, and is written in each file/function that will use the global variable
- A constant is a variable whose value should never change
  - Unlike regular variables, the convention is to spell constants with all capital letters, with each word separated by underscores
  - global C;
  - M_PER_KM = 1000;
- The mod() function returns the remainder after dividing the 1st parameter by the 2nd parameter.
  - Mod(11, 3) = 2
- The purpose of functions for a user
  - The user of the function knows what the function does, d=but doesn't know how the function does it
  - So the user of the function needs to know
    - What parameters need to be given (if any)
    - And what returned value if any will be given
  - This information can be given by the author of the function with documentation

        - Write comments at the top of an .m file
        - These comments are visible to users of the function when they use the **help** command
        - The command should include the function header(function name, returned variable and parameters) and describe them if necessary
- We can put many functions into one file
    - The function at the top must have a name that matches the filename
    - The other functions are called auxiliary functions (or helper functions)
        - They cannot be used from outside of the file
        - They are local or private to the file
- Handling errors, we can avoid errors by making sure we always return a value
    - This can be very bad as the program will continue to run and we won't know what went wrong
- 2 types of bugs
    - Bugs that cause error messages
        - Try to use not initialised variables
        - Much easier to fix, Matlab guesses where the problem is
    - Bugs that don't cause error messages
        - Wrong value is calculated and printed
        - Harder to fix, you have to find that there is an error, and then figure out where it occurs
- As soon as we detect a problem, we should make it clear that an error has occurred
    - We can give a nice error message using error()
        - Same way as fprintf()
- Computers have limited precision and can't represent decimal numbers perfectly
    - In general, you must be careful when handling floating point (decimal) numbers

Lecture 8.1 – Strings in matlab

- A string(character string) is an ordered sequence of characters
    - In Matlab, a string is represented as an array (vector) of chars
- Whatever is between the single quotes will be the characters that for the string
    - S1 = 'Hello'
- If you want a single quote in the string, we type 2 single quotes
    - S2 = 'It''s so much fun!'
- Since a string is a 1D array, we can treat strings as 1D arrays
    - s1 = 'Fun';
      size(s1) = 1 3
      length(s1) = 3
      sl(2) = u
- You can also add two strings together
    - S1 = 'Fun'
      S2 = 'Joy'