20875 Software Engineering

Tutorial 2

1. Download the archive file `secret.zip` and uncompress it. (There will be no need to execute the files inside.)

2. The executable `secret` contains a hidden compressed image. Determine the image format, the library used to uncompress it, and the version of this library.

3. The executable contains a hidden password. Find this password.

4. [hard] The image is an image of a flag. Find out which country.

5. The executable `app` is an application. Determine which ISA and OS it is build for. Determine which common app it is.

6. Write a C program that takes two arguments: a file name, and the size of this file in bytes. The program maps the content of the file into memory using `mmap()`. Then, it accesses the contents and prints them in hexadecimal (similar to what `hexdump` does).

7. [long] Download source code of the library 'GMP' from `https://gmplib.org/` (latest version). Compile the library and run a few of the tests.

8. [long] Consider the following task. We have a directory called `source/` that contains images. For each image, we want to create, in the directory `thumbnail/`, a version of this image whose width and height are both at most 256 pixels. You can use the `convert` or `magick` utility to that end. Write a `Makefile` that automates this task, and allows us to recompute the thumbnails only when source images are modified.

    Hint: a few links to the `magick` documentation:

    - General `magick` command documentation
    - `-scale` parameter
    - geometry specification