

## Trusted Components

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Work group size: two

## Development Project: Web-Based File Server

### Requirement Document

A group of developers wants to share files via the Internet. To achieve this, a web-server should be set up that provides access to individual files.

The system has to be able to perform the following operations:

1. The file server is accessible using a standard web-browser.
2. Users should be able to login and logout of the file server, using password authorization. The name/password pairs should be taken from a file on the disc. Access to any other service from the server requires prior authorization.
3. Once logged in, users are able to upload files to the server and receive files from the server.
4. Per default, a file is owned by the user who uploaded it.
5. It is possible to delete files. Only owned files can be deleted.
6. Every file is either private or public.
7. Private files can only be read by the owner.
8. Public files can be read by every authorized person.
9. New files are private, the owner of the file can change the status of the file from private to public and back.

The server should be reasonably secure, though encryption of message of the network is not needed as the network can be trusted. The file server should perform sufficiently fast to support access by multiple users. It is critical that the server, once deployed, runs stable and will no crash during operation.

### Deliveries

- Develop the given web-server in Eiffel. Deliver the source code of the project in form of a compilation-ready archive. Supply a short “installation” instruction and make sure that you do not have any absolute paths in your “.ace” or “.xace”-file.
- Give a short (around 5 pages) document, describing your implementation and reason about the quality of your software. Describe where your software has a high quality and which are the weaker parts of your software. Make a short statement on the quality of the components libraries that you have used to implement your web-server. Describe what you found difficult to implement and why.

### Remark

As a first step, you should analyze the requirements document and see, if you can find unclear specifications or conflicting requirements. If you think you need more information on the problem, feel free to ask questions to [bernd.schoeller@inf.ethz.ch](mailto:bernd.schoeller@inf.ethz.ch)

Try as hard as possible to develop piece of high-quality software. The software should work at

least on one operating system, but consider the portability of your software to other operating systems.

Try to think in all dimensions of software quality: software correctness, security, robustness, ease of reuse, performance etc.

Try to convince us, that your software has a high quality. Use techniques to increase the trust into your software. You can use the AutoTest tool (reference below) to increase the trust into your software. Take subsystems of your software and proof/formally reason why your implementation is correct.

## Resources

Documents:

- RFC 2616 – The Hypertext Transfer Protocol 1.1 (<http://www.faqs.org/rfcs/rfc2616.html>)
- HTTP Made Really Easy – <http://www.jmarshall.com/easy/http/>
- RFC 2045 and RFC 2046 – The Multipurpose Internet Mail Extensions (MIME) (<http://www.faqs.org/rfcs/rfc2045.html> and <http://www.faqs.org/rfcs/rfc2046.html>)
- SelfHTML – An online introduction and reference for HTML ([www.selfhtml.org](http://www.selfhtml.org))

Software Tools:

- Eiffel Studio, as available from [www.eiffel.com](http://www.eiffel.com)
- GOBO Tools (geant, gelint) – <http://www.gobosoft.com/>
- Auto Test - [http://se.inf.ethz.ch/people/leitner/auto\\_test/](http://se.inf.ethz.ch/people/leitner/auto_test/)

Reusable Components and Libraries:

- The libraries that come with EiffelStudio, include the EiffelWeb and EiffelNet libraries
- The Eiffel Software Directory – <http://www.eiffelzone.com/esd/>
- GOBO – <http://www.gobosoft.com/>
- ePosix – <http://www.berenddeboer.net/eposix/>
- EiffelMedia – <http://eiffelmedia.origo.ethz.ch/>