The basic design of the web, as introduced in chapter 1, is that of a distributed hypermedia system. The two main architectural constructs at this level are the individual pieces of information or information resources (which in most cases are web pages), and the links between them, connecting these individual pieces of information to form an interconnected web of information resources. While we discuss the actual pieces of information in later chapters of the book, we first take a closer look on what these links are and how they work.

Although the usual term to refer to pointers to web resources is “links”, this is not exactly what this chapter is about. A link is a mechanism which identifies a resource within some kind of framework, for example a link on a web page. The identification itself can be seen separately from the link, and even if no link points to some resource, it still has an identifier. For this reason, it is important to differentiate between identifiers for the identification of resources, and links which use identifiers to establish connections between resources.

Section 2.1 contains a general discussion of why identifiers are such an important issue for the web. This is done from a user perspective, describing from the user’s view where identifiers come into play and why it is necessary to have them. Another perspective is shown from the designer’s point of view, giving a more theoretical description of what the design issues were when identifiers were invented as part of the web’s core architecture. After this motivation of why identifiers are needed, section 2.2 describes the syntax of web identifiers, that is their formal structure (which is extremely simple). The semantics of web identifiers, that is their meaning and how they can be used, are described in section 2.3. Finally, section 2.4 gives a short discussion about future trends of web identifiers.

2.1 The need for resource identification

One of the main aspects of the web is its world wide distribution and its ability to include a multitude of different information resources, not only web specific ones. This basically means that it must be possible to somehow point to these
resources, and the way this is done should be as powerful, yet as simple as possible. The way it is done in the web is via identifiers, which are normally used inside information resources to point to other information resources. However, it should also be possible to use these identifiers externally, thereby making it possible to exchange them in written form or even in conversations (e.g., over the phone).

Web identifiers can be seen from two different perspectives. The first perspective, which is the one everyone who ever used the web is familiar with, is the user perspective. We give a description of this perspective in section 2.1.1, which can be seen as a short review of how web identifiers are encountered when using the web. However, there is a more technical and systematic way of looking at web identifiers, and this is the designer's perspective. In section 2.1.2, we discuss the design goals of web identifiers and what has been done to make sure that these goals were met.

2.1.1 Web identifiers from a user perspective

When browsing the web, most links (HTML constructs containing identifiers) can be visually recognized as specially formatted text (colored and/or underlined, depending on the browser and the user's preferences) within the normal flow of text, and selecting such a link with a pointing device usually instructs the browser to load the piece of information pointed to by the link's identifier. Another way a link may be visible is as an image (which normally should contain some visual hint, such as text or graphic symbols like arrows or signs, that is it not only an image but also a link), and these links work the same way as textual ones, in that their selection with a pointing device instructs the browser to follow the link. In both cases (links represented by text or images), most browsers will notify the user about a link by changing the cursor shape when moving over it (additionally, most browsers also display the link's identifier in some form of status line, so that users can actually see what they will do when selecting the link).

In most cases, users do not need to be concerned with how links look and where they point to, all they have to do is click on some text or other visual representation of a link, and the browser will perform whatever is necessary to open this link. It is believed to be one of the main reasons for the huge success of the web that the user normally does not have deal explicitly with identifiers of information resources, but can use simple and intuitive links to use them. Even when not using a link from a currently loaded web page but an identifier of an information resource which has been visited before, often it is not necessary to type in or remember the identifier to this information resource, instead it can be used from what is usually called a bookmarks folder.