Internet and Web Applications  
Exercise "Basic aspects of Web applications"

1. Representational State Transfer  
As the lecture presented, the REST application model is basically determined by:  
- Client/server architecture  
- A stateless communication protocol  
- Generic application interface with standard semantics  
- Operations are addressed to resources  
- Messages are self-descriptive

a) Why are not all web applications compliant to the REST model?  
b) What are advantages of the REST architecture?

2. HTTP 1.1 efficiency / TCP Fast Open  
a) Which feature of the Transmission Control Protocol is particularly used efficiently if an arbitrary number of HTTP request/response messages and thus a potentially high number of TCP packets may be exchanged after establishing a connection?  
b) Have a look at the specification of the TCP extension “TCP Fast Open”: https://tools.ietf.org/html/rfc7413  
Explain how this extension works.

3. HTTP/2  
What are core differences between HTTP/2 and HTTP 1.1? Provide a general comparison between the two protocol versions.

4. Cookie mechanism  
a) Describe the mechanism of Cookie handling for enabling server-side sessions in detail. Describe especially the used HTTP header fields.  
b) Discuss possibilities to handle session tracking if cookies are disabled.

5. Indexed Database API  
a) Provide a short definition of the terms key, index and cursor in the context of the Indexed Database API and discuss what they are used for.  
b) Implement a simple task list ("todo list") application. The application should make it possible to add tasks to a task list via a simple form (e.g. displayed in the following figure). The tasks should be stored using the IndexedDB API. Test the application e.g. using Google Chrome.