Exercise for Lecture Software Defined Networking

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Contact: Please use the Moodle forum to post questions and remarks on the exercise.
Web: `http://www.ps.tu-darmstadt.de/teaching/ws1617/sdn/`
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Problem 2.1 - SDN and OpenFlow Basics

Hint: A 30-minutes version of Scott Shenker's talk on "The Future of networking, and the Past of Protocols" that the lecture was partially based on is available on YouTube: `https://www.youtube.com/watch?v=YHeyuD89n1Y`. It might help you to revisit some of the concepts presented in the lecture.

a) Separation of Concerns: Briefly explain in your own words the different responsibilities of the SDN layers described by Scott Shenker: *Control Program*, *Network Virtualization* layer, and *NOS*.

b) Foundation of layers: What are the key abstractions that provide the foundation of SDN? Briefly explain what exactly is abstracted, how the interfaces of the abstractions look like, and who uses them.
Note: This task overlaps with the previous one but requires you to take a more conceptual perspective.

c) Briefly explain the concept of a "scale-out router" in the context of network virtualization (slide 42, lecture 2). What is the advantage of using this abstraction in the context of the above discussed abstractions?

d) When network engineers start learning about SDN, they often get the impression that the concept introduces a single point of failure to the process of network control. Why is this the case and why is it not true after what you learned in the first lectures? Please briefly explain.