

Name: \_\_\_\_\_

USC ID: \_\_\_\_\_

# INF 529 Final Exam

## Spring 2016

### Instructions:

Show all work. No electronic devices are allowed. This exam is open book, open notes. You have **120 minutes** to complete the exam.

Please prepare your answers on separate sheets of paper. You may write your answers on the sheet of paper with the question (front and back). If you need more space, please attach a separate sheet of paper to the page with the particular question. **Do NOT extend your answer on the back of the sheet for a different question, and do NOT use the same extra sheet of paper to answer more than one question.** The exam will be split apart for grading by different people, and if part of your answer for one question appears on a page given to a different grade because the sheet contains parts of the answer to more than one question, then you will NOT receive credit for that part of the answer not seen by the grader. In particular, **each numbered questions must appear on separate pieces of paper so that the exam can be split for grading.**

Be sure to include your **name** and **USC ID** number **on each page.**

There are **100 points** in all and **3 questions.**

	Q1	Q2	Q3		Total Score
Score					

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1. Privacy Tools (40 points)

a) Group the following tools into three categories based on the aspect of privacy that they protect. Name and describe the three categories, then list the tools that fit in each. (15 points)

TrueCrypt,	WhatsApp,	TOR,
PGP,	Anonymizers,	i-Phone memory encryption,
whole disk encryption,		WIKR,
SSL/TLS,	Snapchat,	Virtual Private Networks,

b) The going dark debate concerns the proliferation of these kinds of tools and the integration and use of the technologies by default within the communication and storage systems in common use. Some sides argue for backdoors in such technology. Discuss the arguments on both sides of the debate. (15 points)

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- c) Even when these technologies are deployed, it is still possible to get around the privacy provided in certain technical circumstances. Give a few examples of techniques for getting around these privacy preserving technologies (10 points).

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2. Internet of Things (35 points)

- a) List four distinct reasons that security and privacy is such an issue for the Internet of Things. For each, explain the problem and provide examples. There are more than four to choose from, so your list will not be exhaustive. You should try to touch upon the most important reasons. (15 points)

- b) As a developer of system that utilizes devices thought of as part of the Internet of Things, suggest steps that you should take to ensure privacy for your users. (10 points)

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- c) As an individual that comes in contact with the Internet of Things, suggest some steps that you might take to improve your privacy and security. (10 points)

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3. Electronic Payments and Transactions (25 Points)

a) Discuss the level of privacy and anonymity provided by the following payment services:

i) MasterCard and Visa transactions

ii) Paper currency

iii) The use of prepaid gift cards

iv) Bitcoin

v) Venmo

In your discussion be sure to touch upon the information that is exposed about a transaction and to whom, and under what conditions the information might be exposed. (15 points)

b) What can be learned from the information that is available or exposed by the financial transactions in the systems discussed above? (10 points)