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| 中国地质大学计算机学院网络工程系 |
| 网络科学导论 |
| 课后作业 |

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| 谢永斌 |





《网络科学导论》

课程报告

姓 名： 谢永斌 学 号： 20181002099

院（系）： 计算机学院 专 业： 网络工程

指导教师： 李振华 职 称： 教授

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课后作业

***问题一***：计算机网络领域现在出现的一个比较重要的问题是信息安全，说起它的起源，最早应该可以追溯到计算机网络初步构建起来的时候，可以说它们几乎是相伴而生的吧。

计算机网络信息安全面临的主要威胁有以下几个：

* 黑客的恶意攻击。
* 网络自身和管理存在欠缺。
* 软件设计的漏洞或“后门”而产生的问题。
* 恶意网站设置的陷阱。
* 用户网络内部工作人员的不良行为引起的安全问题。
* 那就还有人为的误接收病毒文件也是有可能的

所以我认为可以从以下几点来改善这个问题：

1加强技术研究，尽力完善网络可能存在的漏洞

2加强公民道德素质建设工作，减少黑客的存在

3加强网络监督工作，严厉打击并清除恶意网站

针对上边提到的问题和解决方案，我想未来的发展前景有以下几点：

1网络设计师

2网络工程师

3教育家

***问题二***：现在比较热门的一个事件就是“中兴遭美封杀 倒逼“中国芯””



美国商务部在美东时间4月16日宣布，因中兴违反了美国限制向伊朗出售美国技术的制裁条款，将禁止美国公司向中兴通讯销售零部件、商品、软件和技术7年，直到2025年3月13日。中兴针对制裁发布声明，称已获悉美国商务部对公司激活拒绝令。公司正在全面评估此事件对公司可能产生的影响，与各方面积极沟通及应对。

在此之前，中美关税贸易大战已经涉及到两国多家企业，业内专家指出，通过本次制裁可以看到，中国在芯片、元器件领域仍然较为弱势，因此大力发展创新产业，逐步弥补产业差距，才是应对此类风波的终极手段。

目前，中兴有25%-30%的零部件来自美国供应商，但最为核心的零部件都依赖于美国供应商。中兴的手机芯片、基带芯片、射频芯片、存储芯片、手机玻璃、光学元件等核心零部件都来自于美国的高通、博通、英特尔、美光、甲骨文、康宁等科技巨头，短期内无法找到能保持相同竞争力的替代产品。

7月12日美国商务部表示已取消近三个月来禁止美国供应商与中兴进行商业往来的禁令，中兴公司将能够恢复运营，禁令将在中兴向美国支付4亿保证金之后解除。

***看法***：我在想之所以发生这样的的问题，主要还是我国在某些重要领域不够领先，所以在这些重要领域的突破也是当下的重中之重。

***问题三***：全球计算机网络最好的十个期刊：1 Proceedingsof the IEEE Proceedings of the IEEE is the leading journal to provide in-depth review, survey, and tutorial coverage of the technical developments in electronics, electrical and computer engineering, and computer science. Consistently ranked as one of the top journals by Impact Factor, Article Influence Score and more, the journal serves as a trusted resource for engineers around the world.

2 IEEE/ACMTransactions on Networking IEEE/ACM Transactions on Networking’s high-level objective is to publish high-quality, original research results derived from **theoretical or experimental exploration of the area of communication/computer networking**, covering all sorts of information transport networks over all sorts of physical layer technologies, both wireline (all kinds of guided media: e.g., copper, optical) and wireless (e.g., radio-frequency, acoustic (e.g., underwater), infra-red), or hybrids of these. The journal welcomes applied contributions reporting on novel experiences and experiments with actual systems.

3 IEEE Journal on Selected Areas in Communications Each issue of the IEEE Journal on Selected Areas in Communications (JSAC) is devoted to a specific technical topic and thus provides to JSAC readers a collection of up-to-date papers on that topic. These issues are valuable to the research community and become valuable references. The technical topics covered by JSAC issues span the entire field of communications and networking. JSAC publishes only papers that are submitted in response to a Call-for-Papers. These calls are published in JSAC issues and other publications of the IEEE Communications Society as appropriate to the subject area of the call. Papers submitted for review for possible publication in a JSAC issue must be submitted to one of the Guest Editors listed in the Call-for-Papers. See "Information for Authors" found in any JSAC issue for additional instructions. Topics for JSAC issues are determined by the JSAC Editorial Board after review of proposals submitted by interested parties. All are invited to submit proposals. Instructions for submitting proposals are included in the Guidelines for Proposal preparation on the JSAC website. Recent issue themes included: Network Coding for Wireless Communication Networks, Wireless and Pervasive Communications for Healthcare, Network Infrastructure Configuration, Broadband Access Networks: Architectures and Protocols, Body Area Networking: Technology and Applications, Underwater Wireless Communication Networks, Game Theory in Communication Systems, Exploiting Limited Feedback in Tomorrow’s Communication Networks.

4 IEEE Transactions on Mobile Computing *IEEE Transactions on Mobile Computing* focuses on the key technical issues related to (a) architectures, (b) support services, (c) algorithm/protocol design and analysis, (d) mobile environments, (e) mobile communication systems, (f) applications, and (g) emerging technologies. Topics of interest include, but are not limited to, the following: a) Architectures - Mobile networks and hosts, Agents and proxies, Mobility management, mobile agent and proxy architectures Integrated wireline and wireless systems, Planning and standardization. b) Support Services - Mobility and roaming, Nomadic computing, Multimedia Operating system support, Power management. c) Algorithm/Protocol Design and Analysis - Online and mobile environments, Limited bandwidth, Intermittent connectivity. d) Mobile Environments - Data and knowledge management, Performance modeling and characterization, Security, scalability and reliability, Design, management and operation, Systems and technologies. e) Mobile Communication Systems - Wireless, cellular and spread-spectrum systems, Multi-user and multi-access techniques and algorithms, Multi-channel processing, Channel coding, Data coding and compression. f) Applications - Location-dependent and sensitive, Nomadic computing, Wearable computers and body area networks, Multimedia applications and multimedia signal processing, Pervasive computing, Wireless sensor networks. g) Emerging Technologies.

5 IEEE Transactions on Information Theory The IEEE Transactions on Information Theory is a journal that publishes theoretical and experimental papers concerned with the transmission, processing, and utilization of information. The boundaries of acceptable subject matter are intentionally not sharply delimited. Rather, it is hoped that as the focus of research activity changes, a flexible policy will permit this Transactions to follow suit. Current appropriate topics are best reflected by recent Tables of Contents; they are summarized in the titles of editorial areas that appear on the inside front cover.

6 IEEE Network As currently defined, IEEE Network covers the following areas: 1. network protocols and architectures, 2. Protocol design and validation, 3. Communication software and its development and test, 4. Network control and signalling, 5. network management, 6. Practical network implementations including local area networks, (LANs), metropolitan area networks (MANs), and wide area networks, (WANs), 7. Switching and processing in integrated (voice/data) networks and network components, 8. Micro-to-host communication

7 IEEE CommunicationsMagazine IEEE Communications Magazine, considered by most to be their most important member benefit, provides timely information on all aspects of communications: monthly feature articles describe technology, systems, services, market trends, development methods, regulatory and policy issues, and significant global events. These articles are complemented by a variety of departments, including: Conference Calendar, Book Reviews, the Global Communications Newsletter, Scanning the Literature, New products and Product Spotlights, Society News, Your Internet Connection, News from JSAC, and the CommuniCrostic puzzle. Articles are tutorial in nature and written in a style comprehensible to readers outside the specialty of the article. Mathematical equations are generally not used (in justified cases up to three simple equations may be allowed with the consent of the Guest Editor. The inclusion of more than three equations requires permission from the Editor-in-Chief).References are included only to guide readers to more information on the topic; the reference list should not include every available source (a limit of ten references is recommended. The inclusion of more than 15 references requires permission from the Editor-in-Chief). Articles should not exceed 4500 words. Figures and tables should be limited to a combined total of six.

8 IEEE WirelessCommunications IEEE Wireless Communications is designed for individuals working in the communications and networking communities. It covers technical and policy issues relating to personalized, location-independent communications in all media (and combinations of media), and at all protocol layers. Both wired and wireless communications are covered as well as computing, the mobility of people, communicating devices, and personal services. Each issue of this interdisciplinary magazine provides articles of high quality and depth concerning the revolutionary technological advances in personal, location-independent communications and computing.

9 IEEE Transactions on Communications The *IEEE Transactions on Communications* publishes high-quality manuscripts on advances in the state-of-the-art of all telecommunications including telephone, telegraphy, facsimile, and television, by electromagnetic propagation including radio; wire; aerial; underground, coaxial, and submarine cables; waveguides, communication satellites, and lasers; in marine, aeronautical, space and fixed station services; repeaters, radio relaying, signal storage, and regeneration; telecommunication error detection and correction; multiplexing and carrier techniques; communication switching systems; data communications; and communication theory.

10 IEEE Transactions on Wireless Communications The IEEE Transactions on Wireless Communications publishes high-quality manuscripts on advances in the state-of-the-art of wireless communications. Both theoretical contributions (including new techniques, concepts, and analyses) and practical contributions (including system experiments and prototypes, and new applications) are encouraged.  The general scope of the Transactions includes, but is not limited to, the following: Modulation and coding , Detection and estimation, Diversity techniques and equalization, Propagation and channel characterization, Fading countermeasures, Multiuser detection, Signal separation and interference rejection, DSP applications to wireless systems, Broadband wireless communications, Network architectures and protocols, with an emphasis on physical and link layer communication, Adaptive antennas for wireless systems, Multiple access techniques, Space-time processing , Synchronization techniques, Software radio, Resource allocation and interference management, Multirate and multicarrier communications, Security, privacy, and authentication, Experimental and prototype results, Systems and services including mobile satellites, wireless local loops, wireless LANs, wireless PBX, and PCS/cellular.  
In addition, papers on specific topics or on more non-traditional topics related to specific application areas, are encouraged.  Examples include Simulation tools and methodologies for design, analysis, rapid prototyping, performance prediction, and cellular system engineering; Orthogonal frequency division multiplexing; MIMO systems, and Wireless over optical.

全球计算机网络领域最好的十个会议：

1 ACM MOBICOM --ACM International Conference on Mobile Computingand Networking The Annual International Conference on Mobile Computing and Networking (MobiCom) has been held every year since 1995. The conference serves as the premier international forum addressing networks, systems, algorithms, and applications that support the symbiosis of mobile computers and wireless networks. The conference covers all areas of mobile computing and mobile and wireless networking.

2ACMSIGCOMM--ACMInternationalConference on the applications,technologies, architectures, and protocols for computer communication SIGCOMM is ACM's professional forum for discussing communications and computer networks.

SIGCOMM members include scientists, engineers, educators and students. They study all aspects of computer communications and networks: analysis, technical design, engineering, measurement and management. Our members are particularly interested in the systems engineering and architectural questions surrounding computer communication.

SIGCOMM supports a wide variety of activities in the field:

3 IEEE INFOCOM--Conference on Computer Communications IEEE INFOCOM is a top ranked conference on networking in the research community. It is a major conference venue for researchers to present and exchange significant and innovative contributions and ideas in the field of networking and closely related areas. IEEE INFOCOM covers both theoretical and systems research. For INFOCOM 2018, the conference includes a main technical program, a number of workshops, a keynote speech, panels, a student poster session, and demo/poster sessions.

4 IEEE ICNP--International Conference on Network Protocols ICNP, the IEEE International Conference on Network Protocols, is the premier conference covering all aspects of network protocol research, including design, analysis, specification, verification, implementation, and performance.

5ACM/IEEEMobiHoc--InternationalSymposium on Mobile Ad Hoc Networking and Computing SIGMOBILE was formed in 1996 as an international ACM community of researchers and practitioners who:

* Perform research in the theory and practice of all areas related to the mobility of systems, users, data, and computing;
* Expand the evolution of portable computers and wireless networks;
* Support the convergence of mobility, computing, and information organization; and
* Improve access, services, management, and applications for mobile computing and communications.

6 IEEE IWQoS--International Workshop on Quality ofService Quality of Service (QoS) has long been the focus of communications and networking researchers worldwide. While traditional QoS research areas continue to attract much interest, recent exploration of Internet of things, data centers, virtualization, cloud and fog computing, cloud services, industrial communication systems, and “green” computing has motivated a new wave of research interest in service guarantees with QoS, and its related metrics of Quality of Experience (QoE), Quality of Protection (QoP), Software Quality, Knowledge Base Quality or, more broadly, Quality of Information Technology.   
For more than two decades, IWQoS has established itself as a highly reputable forum to present novel ideas on all QoS-related subjects. IWQoS 2017 sets the goal to continuing to be a premier symposium and an international forum for presentation and discussion of cutting-edge research in the field. The scope of IWQoS 2017 covers both newest theoretical and experimental research papers.   
Besides regular papers, this year, IWQoS includes the Work-in-Progress track inviting papers presenting new talent, risky ideas, and new subjects to be discussed in a creative and inspiring atmosphere of the event. It is a lively forum to discuss work among each other and with senior researchers, with a special focus on work in progress, upcoming research challenges, and new directions in the field of QoS.

7 IEEE Globecom--IEEE Global Communications Conference **IEEE Global Communications Conference (GLOBECOM)** is one of the IEEE Communications Society’s two flagship conferences dedicated to driving innovation in nearly every aspect of communications. Each year, more than 3000 scientific researchers and their management submit proposals for program sessions to be held at the annual conference. After extensive peer review, the best of the proposals are selected for the conference program, which includes technical papers, tutorials, workshops and industry sessions designed specifically to advance technologies, systems and infrastructure that are continuing to reshape the world and provide all users with access to an unprecedented spectrum of high-speed, seamless and cost-effective global telecommunications services.

8 IEEE ICC--IEEE International Conference on Communications **IEEE International Conference on Communications (ICC)** is one of the IEEE Communications Society’s two flagship conferences dedicated to driving innovation in nearly every aspect of communications. Each year, more than 2,900 scientific researchers and their management submit proposals for program sessions to be held at the annual conference. After extensive peer review, the best of the proposals are selected for the conference program, which includes technical papers, tutorials, workshops and industry sessions designed specifically to advance technologies, systems and infrastructure that are continuing to reshape the world and provide all users with access to an unprecedented spectrum of high-speed, seamless and cost-effective global telecommunications services.

9 IEEE ICCCN-- IEEE International Conference on Computer Communicationsand Networks ICCCN is one of the leading international conferences for presenting novel ideas and fundamental advances in the fields of computer communications and networks. ICCCN serves to foster communication among researchers and practitioners with a common interest in improving computer communications and networking through scientific and technological innovation.

10 IEEE WCNC-- IEEE Wireless Communications &Networking Conference IEEE WCNC is the world premier wireless event that brings together industry professionals, academics, and individuals from government agencies and other institutions to exchange information and ideas on the advancement of wireless communications and networking technology.

当代计算机领域十个最牛人物：

1拉里·佩奇(Larry Page)和赛吉·布林(Sergey Brin) 1998年，24岁的佩奇和布林在一间车库里创办了谷歌。他们的创业经历激励了数以千计的年轻人通过互联网赚取真金白银。年收入达数十亿美元的谷歌撼动了整个互联网产业。

2 蒂姆-伯纳斯·李(Tim Berners-Lee) 蒂莫西·约翰·“蒂姆”·伯纳·李爵士（Tim Berners-Lee），[OM](https://baike.baidu.com/item/OM" \t "_blank)，[KBE](https://baike.baidu.com/item/KBE" \t "_blank)，[FRS](https://baike.baidu.com/item/FRS" \t "_blank)，FREng，FRSA，（Sir Timothy John "Tim" Berners-Lee，1955年6月8日－），英国[计算机](https://baike.baidu.com/item/%E8%AE%A1%E7%AE%97%E6%9C%BA" \t "_blank)科学家。

他是[万维网](https://baike.baidu.com/item/%E4%B8%87%E7%BB%B4%E7%BD%91/215515" \t "_blank)的发明者，[南安普顿大学](https://baike.baidu.com/item/%E5%8D%97%E5%AE%89%E6%99%AE%E9%A1%BF%E5%A4%A7%E5%AD%A6/2066399)与[麻省理工学院](https://baike.baidu.com/item/%E9%BA%BB%E7%9C%81%E7%90%86%E5%B7%A5%E5%AD%A6%E9%99%A2/117999)教授。1990年12月25日，[罗伯特·卡里奥](https://baike.baidu.com/item/%E7%BD%97%E4%BC%AF%E7%89%B9%C2%B7%E5%8D%A1%E9%87%8C%E5%A5%A5/7930364" \t "_blank)在[CERN](https://baike.baidu.com/item/CERN)和他一起成功通过[Internet](https://baike.baidu.com/item/Internet" \t "_blank)实现了[HTTP](https://baike.baidu.com/item/HTTP" \t "_blank)代理与[服务器](https://baike.baidu.com/item/%E6%9C%8D%E5%8A%A1%E5%99%A8/100571" \t "_blank)的第一次通讯。

万维网联盟（W3C）是伯纳斯·李为关注万维网发展而创办的组织，并担任[万维网联盟](https://baike.baidu.com/item/%E4%B8%87%E7%BB%B4%E7%BD%91%E8%81%94%E7%9B%9F/1458269" \t "_blank)的主席。他也是万维网基金会的创办人。伯纳斯-李还是麻省理工学院计算机科学及人工智能实验室创办主席及高级研究员。同时，伯纳斯-李是网页科学研究倡议会的总监。最后，他是麻省理工学院集体智能中心咨询委员会成员。

2004年，英女皇[伊丽莎白二世](https://baike.baidu.com/item/%E4%BC%8A%E4%B8%BD%E8%8E%8E%E7%99%BD%E4%BA%8C%E4%B8%96/869550" \t "_blank)向伯纳斯·李颁发大英帝国爵级司令勋章。2009年4月，他获选为[美国国家科学院](https://baike.baidu.com/item/%E7%BE%8E%E5%9B%BD%E5%9B%BD%E5%AE%B6%E7%A7%91%E5%AD%A6%E9%99%A2/3454676" \t "_blank)外籍院士。在2012年夏季奥林匹克运动会开幕典礼上，他获得了“万维网发明者”的美誉。伯纳斯·李本人也参与了开幕典礼，在一台NeXT计算机前工作。他在[Twitter](https://baike.baidu.com/item/Twitter" \t "_blank)上发表消息说：“这是给所有人的”，体育馆内的LCD光管随即显示出文字来。2017年，他因“发明万维网、第一个浏览器和使万维网得以扩展的基本协议和算法”而获得2016年度的[图灵奖](https://baike.baidu.com/item/%E5%9B%BE%E7%81%B5%E5%A5%96/324645" \t "_blank)。

3马克·扎克伯格(Mark Zuckerberg)

2004年2月，还在哈佛大学主修计算机和心理学的二年级学生扎克伯格突发奇想，要建立一个网站作为哈佛大学学生交流的平台。只用了大概一个星期的时间，扎克伯格就建立起了这个名为Facebook的网站。

4肖恩·范宁(Shawn Fanning) 肖恩·范宁是全球第一个走红的P2P文件共享平台[Napster](https://baike.baidu.com/item/Napster)的创始人。

5凯文·罗斯(Kevin Rose) 建立Revision3和Digg

6马特·穆伦维格(Matt Mullenweg) 穆伦维格于2003年创办了WordPress，并于2005年开始全职从事这项工作。该平台已经成为全球使用最广泛的博客平台之一。穆伦维格简化了所有人在网上发布想法的流程。这个易用的平台也成为最近几年很多创业企业的发展动力。

7布拉姆·科恩（Bram Cohen）布拉姆·科恩(Bram Cohen)，1975年10月12日出生于美国[纽约](https://baike.baidu.com/item/%E7%BA%BD%E7%BA%A6/6230)[曼哈顿](https://baike.baidu.com/item/%E6%9B%BC%E5%93%88%E9%A1%BF/635)，是一位美国计算机[程序员](https://baike.baidu.com/item/%E7%A8%8B%E5%BA%8F%E5%91%98/62748)，最知名的成就是编写了点对点文件共享协议[BitTorrent](https://baike.baidu.com/item/BitTorrent)，并且开发了第一款利用该协议的文件共享程序。他还是[CodeCon](https://baike.baidu.com/item/CodeCon)创始人、旧金山Bay Area p2p-hackers会议的组织者、[Codeville](https://baike.baidu.com/item/Codeville)的编写者。更为著名的是他亲自开发设计了著名游戏平台[Steam](https://baike.baidu.com/item/Steam/10092959)。

8皮埃尔·奥米迪亚(Pierre Omidyar) 彼埃尔6岁时随父母迁居美国，由此成为典型的美国男孩。他少年时期就对计算机兴趣浓厚，自学了BASIC编程语言。高中阶段就用PASCAL编程，并且挣得第一份有报酬的工作——计算机化学校图书馆的索引卡片。上大学也是以计算机为专业，期间曾在硅谷打工，做程序员。1988皮埃尔·奥米亚尔毕业于Tufts大学，获得计算机科学专业学士学位。他曾加盟苹果电脑的子公司Claris，担任消费软件工程师。之后他还与别人共同创建了Ink Development 公司，该公司后来更名为eShop,并被微软收购。1995年，28岁的奥米迪亚写下了[eBay](https://baike.baidu.com/item/eBay/288333)的源代码，他以自己工作的咨询公司Echo Bay为这一[网络拍卖](https://baike.baidu.com/item/%E7%BD%91%E7%BB%9C%E6%8B%8D%E5%8D%96/4118514)系统命名，但未能申请下echobay域名，于是改名为eBay。现在皮埃尔担任奥米亚尔基金会和eBay的董事会主席，同时还是Tufts大学和Santa Fe协会的理事。

9 迈克·莫哈米（Mike Morhaime）迈克·莫哈米**（Mike Morhaime）**是暴雪娱乐总裁，暴雪娱乐极受欢迎的网络游戏《魔兽世界》在全球拥有超过1千万用户，每年为该公司带来至少15亿美元的收入。

10吉米·威尔士（Jimmy Wales）吉米·多纳尔·威尔士（Jimmy Donal Wales，1966年8月7日~）[维基百科](https://baike.baidu.com/item/%E7%BB%B4%E5%9F%BA%E7%99%BE%E7%A7%91/106382)创始人之一。现为维基媒体基金会理事会荣誉主席，同时拥有一家名为Wikia的营利公司（和Wikipedia没有直接关系）。2006年5月，威尔士被《[时代周刊](https://baike.baidu.com/item/%E6%97%B6%E4%BB%A3%E5%91%A8%E5%88%8A/6643818)》选为100个最具影响力人物之一。

全球计算机最好的十个 学校：

斯坦福大学 Stanford University

麻省理工学院 Massachusetts Institute of Technology

牛津大学 University of Oxford

苏黎世联邦理工学院 ETH Zurich – Swiss Federal Institute of Technology Zurich

剑桥大学 University of Cambridge

加州理工学院 California Institute of Technology

卡内基梅隆大学 Carnegie Mellon University

佐治亚理工学院 Georgia Institute of Technology

帝国理工学院 Imperial College London

洛桑联邦理工学院 École Polytechnique Fédérale de Lausanne

计算机领域全世界最好的十个企业：惠普，联想，戴尔，苹果，华硕，宏基，富士通，三星，同方，东芝

***问题四***：我觉得随着人工智能的崛起，我们未来的职业竞争必定是非常激烈的，但是人类在计算机领域还是必不可少的，我们应该时刻关注社会动态，找到自己未来的发展方向，并在这个领域精益求精，做到“术业有专攻”，做好迎接未来的准备。

《网络科学导论》

评语

成绩：