

Badges in Education

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Contents

1	Preface	5
2	Badges in Stack Overflow	7
2.1	The Stack Exchange Network	7
2.2	Dynamics of the Stack Exchange Community	8
2.3	Categorization of Badges	8
2.4	Websites of the Stack Exchange Networks	16
3	Introduction	23
4	Methods	25
5	Applications	27
5.1	Example one	27
5.2	Example two	27
6	Final Words	29

Chapter 1

Preface

Still to write

Chapter 2

Badges in Stack Overflow

2.1 The Stack Exchange Network

2.1.1 172 Websites with Stack Overflow as Showpiece

Why I am using Stack Overflow as my primary example to investigate the usefulness of badges in education?

Stack Overflow is a very successful Question and Answer (Q&A) website. It hosts the world's largest programming community and is still growing. Stack Overflow occupies about the 60th position in the world rankings of websites. Currently (June 2018) it has 8.9 million registered user with 16 million questions and 25 million answers. There are already clones in different languages (Russian , Japanese, Spanish and Portuguese) whose user basis at least are partially to add.

But Stack Overflow is just the flagship of StackExchange, a network of (currently) 173 Q&A websites, following the same principles for community management. With this high number of Q&A websites for different issues and target groups it is allowed to assume that at least some principles of the successful community management of programmer are not only restricted to technical subjects but can be transferred to other areas as well. One can see from the graphical representation of the Stack Exchange sites that technology, “hard sciences” like mathematics, physics, chemistry dominate the network. But there are also websites on philosophy, language learning and even websites addressing recreational issues like bicycles, chess and beer, wine & spirits.

Stack Exchange network consists of 173 Q&A communities including Stack Overflow, the largest, most trusted online community for developers to learn, share their knowledge, and build their careers. (Quote from the Stack Overflow website) ¹

¹This quote appears in a little window when you are on the meta site and you click in the StackExchange banner left from the search field. But actually in my downloaded data I found just 172 websites. On the about site of StackExchange however I have seen outdated information from the year 2015 (Today: 25th May 2018). You can find another summary of the astonishing success story of StackOverflow from a business perspective on the company page of StackOverflow. – It is sometimes difficult for me to find the right place for some information because of the complex clutter of (similar) sites on different levels (site and meta site).

2.1.2 “Graduates” Websites and Websites on Trial (Beta)

2.1.3 Stack Exchange Websites by Subject

2.2 Dynamics of the Stack Exchange Community

But before to look into these other websites one should grasp the community dynamics of the most successful member of the network.

All Stack Exchange websites are based of a complex interplay between different elements:

1. **Scores (“reputation” points)** are earned through positive votes by peers for posting useful answers but also for asking questions, if they show research effort and their underlying problems are reproducible.
2. **Badges** as digital token in form of emblems. They are awarded by the system either for fulfilling certain tasks or reaching a certain amount of community awareness.
3. **Privileges** are granted when certain thresholds or milestones of reputation points are transcended. Each privilege opens up a specified user rights in relation to the website.

I am convinced that the study of user interactions of Stack Overflow can be very helpful to understand the success factors for a prosperous community building process. To study user behavior and their reactions to the rules and framework of Stack Overflow one can learn not only much about the effects of gamification elements (e.g. the interplay between reputation points and badges) but also how communities of practice work.

Besides the common review of literature my research in this paper is based on four sources:

1. **Stack Overflow:** Clearly enough this has to be one of my chief source of information.
2. **Stack Exchange API:** The Stack Exchange network provides an Application Programming Interface (API) where one can download data for answering research question.
3. **Meta Stack Overflow:** This website is especially dedicated to Q&A *about* Stack Overflow itself. The discussion on this website is an important resource on qualitative data to my research question.
4. **Meta Stack Exchange:** Another for meta-discussion. This time for the whole Stack Exchange family of Q&A websites, so to speak the meta-meta-website of the Stack Overflow website.

2.3 Categorization of Badges

I need to download all types of badges with their description and for further investigation to categorize them.

2.3.1 Badges for different activities

The badges are grouped according to the necessary activities to get them. The long version what you have to do to get a a specific badge is posted on meta.stackexchange.com under the title: List of all badges with full descriptions. A short and more readable version can be seen on help page for badges:

- 1) Question badges
- 2) Answer badges
- 3) Participation badges
- 4) Moderation badges
- 5) Other badges
- 6) Documentation badges

2.3.2 Badges from different sources

Another differentiation is the point of origin the badges come from. Even though all badges are generated automatically by the system, there are two principal sources to get them. There are two different entities responsible for awarding badges.

- There are badges you can get by just doing a certain action once or a needed number of times. * And there are badges you get only after some community action.

I call the first type **user** and the second type **peer** badges.

Examples for user badges:

- Name: “Civic Duty” (Vote 300 times).
- Name: “Enthusiast” (Visit the site each day for 30 consecutive day)

Some of the **user** badges are only available after some threshold value is reached and a certain privileges is granted. For instance voting up needs 15 and voting down 125 reputation points.

Examples for peer badges:

- Name: “Favorite Question” (Question favored by 25 users)
- Name: “Popular Question” (Question with 1000 views).

There are also badges tied with certain events, like moderator election, working with the beta version, meeting employees at an event etc. Mostly these badges are in my categorization **user** badges, but you cannot get them at any time, even if you would have the required privileges.

The badge system of Stack Overflow is a dynamic system. When the website was launched (September 15, 2008) it did not start with all 91 badges which are listed today (May 21, 2018). Some of the badges were added during the history of the website but other are not awarded anymore. Some of those badges which are not functional anymore are retired badges (e.g. “Analytical”, for visiting all sections of the FAQ). This means you will still see some veteran users with these badges. Other badges (all three documentation badges for instance) are withdrawn, e.g. they were even deleted from those user accounts they were awarded earlier. I call these two groups of badges **event** and **dead** badges.

To sum up there are 4 points of origin for badges:

- 1) Badges from user action = **user** badges
- 2) Badges from community action = **peer** badges
- 3) Badges from some action during a specified occurrence = **event** badges
- 4) Badges where the point of origin is not interesting anymore as they are now non-functional = **dead** badges

2.3.3 Badges with different degrees of difficulty

Badges are ranked by their difficulty. According to their level of difficulty users are awarded with bronze (relatively easy), silver (moderately difficult) or gold (difficult) badges.

There are badges with the same action required but with different amount of repetition. User can see those groups of badges separated by lines on the Stack Overflow website. On this page one can also inspect how many time each badge was awarded.

There is also a special group of badges intimately linked with reputation of the user’s expertise. These **Tag Badges** also come with different degrees of difficulty.

I will focus in my research on those badges where users are mainly responsible. Those are the badges where I can show if users are motivated to strive for them.

Visit the site each day for [...] consecutive days. (Days are counted in UTC.)

- 30 (Enthusiast)
- 100 (Fanatic)

Ask a well-received question [...] and maintain a positive question record

- on 5 separate days (Curious)
- on 30 separate days (Inquisitativ)
- on 100 separate days (Socratic)

Complete at least [...]. This badge is awarded once per review type

- one review task (Custodian)
- 250 review tasks (Reviewer)
- 1000 review tasks (Steward)

Edit and answer [...] (both actions within 12 hours, answer score > 0)

- 1 question (Explainer)
- 50 questions (Refiner)
- 500 questions (Illuminator)

Edit

- first post (Editor)
- 80 posts (Strunk & White)
- 500 posts (Copy Editor)

Edit [...] that was inactive for 6 months

- first post (Excavator)
- 100 posts (Archaeologist)

The **user** badges are of utmost importance for my research. Most of these badges are granted for quality assurance work on the website and are not linked with reputation points. They are – from a systemic perspective – important for the dynamic of the website and maintain respective raise the quality of the platform and their ecological sustainability.

When I can show that people are striving to get **user** badges – even when they are not linked with reputation points – than it is evident that badges are some additional (motivational) factors for the community development.

Table 2.1: Badges in Stack Overflow

	ID	Name	Count	Rank	Activity	Origin	Alike	Description
1	222	Altruist	8158	bronze	Question	User	XX	First bounty you manually award on another person's question
2	1306	Analytical	43743	bronze	Other	Dead	XX	Visited every section of the FAQ (retired)
3	260	Announcer	131289	bronze	Other	Peer	22	Share a link to a question later visited by 25 unique IP addresses
4	1286	Archaeologist	1883	silver	Moderation	User	20	Edit 100 posts that were inactive for 6 months
5	9	Autobiographer	799567	bronze	Participation	User	XX	Complete "About Me" section of user profile
6	221	Benefactor	38879	bronze	Question	User	XX	First bounty you manually award on your own question
7	30	Beta	2510	silver	Participation	Event	13	Voted 10 times, added 3 posts score > 0, and visited the site on 3 separate days during the private beta
8	261	Booster	3234	silver	Other	Peer	22	Share a link to a question later visited by 300 unique IP addresses
9	1973	Caucus	573681	bronze	Participation	Event	09	Visit an election during any phase of an active election and have enough reputation to cast a vote
10	6644	Census	71168	silver	Other	Event	XX	Completed the annual Stack Overflow survey; your responses are anonymous
11	8	Citizen Patrol	177509	bronze	Moderation	User	16	First flagged post
12	32	Civic Duty	80312	silver	Moderation	User	XX	Vote 300 or more times
13	4	Cleanup	40887	bronze	Moderation	User	XX	First rollback
14	31	Commentator	799870	bronze	Participation	User	10	Leave 10 comments
15	3108	Constable	0	gold	Moderation	Event	17	Served as a pro-tem moderator for at least 1 year or through site graduation
16	1974	Constituent	186464	silver	Participation	Event	09	Vote for a candidate in the final phase of an election
17	901	Convention	2041	silver	Participation	Peer	14	10 posts with score of 2 on meta
18	223	Copy Editor	2807	gold	Moderation	User	19	Edit 500 posts (excluding own or deleted posts and tag edits)
19	7	Critic	337868	bronze	Moderation	User	XX	First down vote
20	4127	Curious	283493	bronze	Question	User	01	Ask a well-received question on 5 separate days, and maintain a positive question record
21	2278	Custodian	660176	bronze	Moderation	User	18	Complete at least one review task. This badge is awarded once per review type
22	1002	Deputy	10655	silver	Moderation	User	16	Raise 80 helpful flags

Table 2.1: Badges in Stack Overflow (*continued*)

	ID	Name	Count	Rank	Activity	Origin	Alike	Description
23	37	Disciplined	10866	bronze	Moderation	User	XX	Delete own post with score of 3 or higher
24	6157	Documentation Beta	294	silver	Documentation	Dead	XX	Contributed 3+ substantive pieces of documentation during the private beta
25	6158	Documentation Pioneer	2359	silver	Documentation	Dead	XX	Contributed 3+ substantive pieces of documentation in the first month of documentation
26	7358	Documentation User	43292	silver	Documentation	Dead	XX	Earned at least one badge for contributing to Stack Overflow Documentation
27	3	Editor	1941240	bronze	Moderation	User	19	First edit
28	155	Electorate	17053	gold	Moderation	User	XX	Vote on 600 questions and 25% or more of total votes are on questions
29	19	Enlightened	326889	silver	Answer	Peer	XX	First to answer and accepted with score of 10 or more
30	71	Enthusiast	184881	silver	Participation	User	11	Visit the site each day for 30 consecutive days. (Days are counted in UTC.)
31	145	Epic	659	silver	Participation	Peer	12	Earn 200 daily reputation 50 times
32	1287	Excavator	116182	bronze	Moderation	User	20	Edit first post that was inactive for 6 months
33	4368	Explainer	55984	bronze	Answer	User	05	Edit and answer 1 question (both actions within 12 hours, answer score > 0)
34	28	Famous Question	531146	gold	Question	Peer	04	Question with 10,000 views
35	83	Fanatic	28042	gold	Participation	User	11	Visit the site each day for 100 consecutive days. (Days are counted in UTC.)
36	33	Favorite Question	42126	silver	Question	Peer	02	Question favorited by 25 users
37	15	Generalist	1018	silver	Answer	Peer	XX	Provide non-wiki answers of 15 total score in 20 of top 40 tags
38	24	Good Answer	338757	silver	Answer	Peer	06	Answer score of 25 or more
39	21	Good Question	158537	silver	Question	Peer	03	Question score of 25 or more
40	25	Great Answer	58424	gold	Answer	Peer	06	Answer score of 100 or more
41	22	Great Question	26490	gold	Question	Peer	03	Question score of 100 or more

Table 2.1: Badges in Stack Overflow (*continued*)

	ID	Name	Count	Rank	Activity	Origin	Alike	Description
42	18	Guru	107423	silver	Answer	Peer	XX	Accepted answer and score of 40 or more
43	4370	Illuminator	92	gold	Answer	User	05	Edit and answer 500 questions (both actions within 12 hours, answer score > 0)
44	2600	Informed	1728997	bronze	Other	User	XX	Read the entire tour page
45	4128	Inquisitive	28311	silver	Question	User	01	Ask a well-received question on 30 separate days, and maintain a positive question record
46	219	Investor	16376	bronze	Question	User	XX	First bounty you offer on another person's question
47	146	Legendary	250	gold	Participation	Peer	12	Earn 200 daily reputation 150 times
48	1298	Marshal	2512	gold	Moderation	User	16	Raise 500 helpful flags
49	144	Mortarboard	29156	bronze	Participation	Peer	12	Earn at least 200 reputation (the daily maximum) in a single day
50	17	Necromancer	451138	silver	Answer	Peer	07	Answer a question more than 60 days later with score of 5 or more
51	23	Nice Answer	1020981	bronze	Answer	Peer	06	Answer score of 10 or more
52	20	Nice Question	491031	bronze	Question	Peer	03	Question score of 10 or more
53	6381	Not a Robot	892	silver	Other	Event	XX	Met a Stack Overflow employee at an event where Stack Overflow was an organizer or participant with 50 or more attendees
54	27	Notable Question	1859667	silver	Question	Peer	04	Question with 2,500 views
55	5	Organizer	111063	bronze	Moderation	User	XX	First retag
56	998	Outspoken	1156	silver	Participation	Peer	15	Post 10 messages in chat starred by 10 different users
57	38	Peer Pressure	186488	bronze	Moderation	User	XX	Delete own post with score of -3 or lower
58	26	Popular Question	3725497	bronze	Question	Peer	04	Question with 1,000 views
59	62	Populist	16770	gold	Answer	Peer	XX	Highest scoring answer that outscored an accepted answer with score of more than 10 by more than 2x
60	892	Precognitive	0	bronze	Participation	Dead	13	Followed the Area 51 proposal for this site before it entered the commitment phase
61	220	Promoter	69063	bronze	Question	User	XX	First bounty you offer on your own question
62	1276	Proofreader	16465	bronze	Moderation	User	XX	Approve or reject 100 suggested edits

Table 2.1: Badges in Stack Overflow (*continued*)

	ID	Name	Count	Rank	Activity	Origin	Alike	Description
63	262	Publicist	953	gold	Other	Peer	22	Share a link to a question later visited by 1000 unique IP addresses
64	94	Pundit	9207	silver	Participation	Peer	10	Leave 10 comments with score of 5 or more
65	900	Quorum	25227	bronze	Participation	Peer	14	One post with score of 2 on meta
66	4369	Refiner	1774	silver	Answer	User	05	Edit and answer 50 questions (both actions within 12 hours, answer score > 0)
67	1656	Research Assistant	280	silver	Moderation	User	21	Edit 50 tag wikis
68	95	Reversal	291	gold	Answer	Peer	XX	Provide an answer of +20 score to a question of -5 score
69	1478	Reviewer	33425	silver	Moderation	User	18	Complete at least 250 review tasks. This badge is awarded once per review type
70	837	Revival	324339	bronze	Answer	User	07	Answer more than 30 days after a question was asked as first answer scoring 2 or more
71	10	Scholar	1597231	bronze	Question	User	XX	Ask a question and accept an answer
72	14	Self-Learner	122119	bronze	Answer	User	XX	Answer your own question with score of 3 or more
73	3109	Sheriff	36	gold	Moderation	Event	17	Served as an elected moderator for at least 1 year
74	4129	Socratic	3362	gold	Question	User	01	Ask a well-received question on 100 separate days, and maintain a positive question record
75	805	Sportsmanship	2572	silver	Moderation	User	XX	Up vote 100 answers on questions where an answer of yours has a positive score
76	36	Stellar Question	6046	gold	Question	Peer	02	Question favorited by 100 users
77	2279	Steward	11887	gold	Moderation	User	18	Complete at least 1,000 review tasks. This badge is awarded once per review type
78	12	Strunk & White	14705	silver	Moderation	User	19	Edit 80 posts
79	2	Student	1937383	bronze	Question	User	XX	First question with score of 1 or more
80	804	Suffrage	43785	bronze	Moderation	User	XX	Use 30 votes in a day
81	6	Supporter	1168643	bronze	Moderation	User	XX	First up vote
82	1224	Synonymizer	899	bronze	Moderation	Peer	XX	First approved tag synonym
83	254	Tag Editor	21974	bronze	Moderation	User	21	First tag wiki edit
84	884	Talkative	9613	bronze	Participation	Peer	15	Post 10 messages, with 1 or more starred, in chat

Table 2.1: Badges in Stack Overflow (*continued*)

	ID	Name	Count	Rank	Activity	Origin	Alike	Description
85	11	Taxonomist	11747	silver	Moderation	Peer	XX	Create a tag used by 50 questions
86	1	Teacher	1266655	bronze	Answer	User	XX	Answer a question with score of 1 or more
87	225	Tenacious	48183	silver	Answer	User	08	Zero score accepted answers: more than 5 and 20% of total
88	63	Tumbleweed	998633	bronze	Question	Peer	XX	Asked a question with zero score, no answers, no comments, and low views for a week
89	226	Unsung Hero	18860	gold	Answer	Peer	08	Zero score accepted answers: more than 10 and 25% of total
90	1108	Vox Populi	28464	bronze	Moderation	User	XX	Use the maximum 40 votes in a day
91	13	Yearling	1329469	silver	Participation	Event	XX	Active member for a year, earning at least 200 reputation

2.4 Websites of the Stack Exchange Networks

Table 2.2: Websites of the Stack Exchange Network

	Name	User	Rank	Audience
1	3D Printing	9'477	121	3D printing enthusiasts
2	Academia	71'284	32	academics and those enrolled in higher education
3	Amateur Radio	7'840	128	amateur radio enthusiasts
4	Android Enthusiasts	167'425	11	enthusiasts and power users of the Android operating system
5	Anime and Manga	21'826	75	anime and manga fans
6	Arduino	34'891	59	developers of open-source hardware and software that is compatible with Arduino
7	Arqade	122'227	19	passionate videogamers on all platforms
8	Artificial Intelligence	13'578	102	people interested in conceptual questions about life and challenges in a world where 'cognitive' functions can be mimicked in purely digital environment
9	Arts and Crafts	3'453	157	artists and crafters
10	Ask Different	204'749	9	power users of Apple hardware and software
11	Ask Patents	12'010	111	people interested in improving and participating in the patent system
12	Ask Ubuntu	575'722	3	Ubuntu users and developers
13	Astronomy	17'020	88	astronomers and astrophysicists
14	Augur	1'187	171	developers, economists and users interested in the open source, decentralized, prediction market, Augur
15	Aviation	24'031	71	aircraft pilots, mechanics, and enthusiasts
16	Beer, Wine and Spirits	5'387	145	alcoholic beverage aficionados and those interested in beer, wine, or spirits
17	Biblical Hermeneutics	13'028	106	professors, theologians, and those interested in exegetical analysis of biblical texts
18	Bicycles	26'469	68	people who build and repair bicycles, people who train cycling, or commute on bicycles
19	Bioinformatics	2'729	161	researchers, developers, students, teachers, and end users interested in bioinformatics
20	Biology	30'513	65	biology researchers, academics, and students
21	Bitcoin	58'418	37	Bitcoin crypto-currency enthusiasts
22	Blender	42'071	51	people who use Blender to create 3D graphics, animations, or games
23	Board and Card Games	17'861	82	people who like playing board games, designing board games or modifying the rules of existing board games
24	Bricks	7'034	132	LEGO and building block enthusiasts
25	Buddhism	7'599	130	people practicing or interested in Buddhist philosophy, teaching, and practice
26	Chemistry	42'183	49	scientists, academics, teachers and students
27	Chess	13'169	105	serious players and enthusiasts of chess
28	Chinese Language	12'215	110	students, teachers, and linguists wanting to discuss the finer points of the Chinese language

Table 2.2: Websites of the Stack Exchange Network (*continued*)

	Name	User	Rank	Audience
29	Christianity	21'118	78	committed Christians, experts in Christianity and those interested in learning more
30	CiviCRM	4'503	152	administrators and users of the CiviCRM Constituent Relationship Management software
31	Code Review	145'633	13	peer programmer code reviews
32	Coffee	5'278	146	people interested in all aspects of producing and consuming coffee
33	Community Building	3'076	159	community managers, administrators, and moderators
34	Computational Science	19'505	80	scientists using computers to solve scientific problems
35	Computer Graphics	6'493	136	computer graphics researchers and programmers
36	Computer Science	71'485	31	students, researchers and practitioners of computer science
37	Computer Science Educators	5'135	148	those involved in the field of teaching Computer Science
38	Constructed Languages	627	172	designers and users of artificial or invented languages, consciously developed instead of having developed naturally
39	Craft CMS	5'770	139	administrators, end users, developers and designers for Craft CMS
40	Cross Validated	164'454	12	people interested in statistics, machine learning, data analysis, data mining, and data visualization
41	Cryptography	43'965	46	software developers, mathematicians and others interested in cryptography
42	Data Science	41'510	52	Data science professionals, Machine Learning specialists, and those interested in learning more about the field
43	Database Administrators	124'285	18	database professionals who wish to improve their database skills and learn from others in the community
44	DevOps	6'932	134	software engineers working on automated testing, continuous delivery, service integration and monitoring, and building SDLC infrastructure
45	Drupal Answers	52'683	41	Drupal developers and administrators
46	Earth Science	8'181	126	those interested in the geology, meteorology, oceanography, and environmental sciences
47	Ebooks	7'664	129	ebook publishers and readers
48	Economics	12'409	108	those who study, teach, research and apply economics and econometrics
49	Electrical Engineering	133'735	16	electronics and electrical engineering professionals, students, and enthusiasts
50	elementary OS	11'469	114	developers and users of elementary OS and applications
51	Emacs	13'909	101	those using, extending or developing Emacs
52	Engineering	15'054	95	professionals and students of engineering
53	English Language and Usage	213'136	8	linguists, etymologists, and serious English language enthusiasts

Table 2.2: Websites of the Stack Exchange Network (*continued*)

	Name	User	Rank	Audience
54	English Language Learners	57'950	38	speakers of other languages learning English
55	Esperanto Language	1'292	170	teachers and students of the Esperanto language
56	Ethereum	36'102	56	users of Ethereum, the decentralized application platform and smart contract enabled blockchain
57	Expatriates	8'150	127	people living abroad on a long-term basis
58	ExpressionEngine Answers	5'582	141	administrators, end users, developers and designers for ExpressionEngine CMS
59	Freelancing	14'864	96	self-employed and freelance workers
60	French Language	14'380	99	students, teachers, and linguists wanting to discuss the finer points of the French language
61	Game Development	88'706	24	professional and independent game developers
62	Gardening and Landscaping	11'967	112	gardeners and landscapers
63	Genealogy and Family History	4'892	149	expert genealogists and people interested in genealogy or family history
64	Geographic Information Systems	89'486	23	cartographers, geographers and GIS professionals
65	German Language	21'206	77	speakers of German wanting to discuss the finer points of the language and translation
66	Graphic Design	83'771	27	Graphic Design professionals, students, and enthusiasts
67	Hardware Recommendations	6'946	133	people seeking specific hardware recommendations
68	Health	9'923	117	medical specialists, students, dietitians, and anyone with health-related questions
69	Hinduism	9'579	120	followers of the Hindu religion and those interested in learning more about Hinduism
70	History	20'959	79	historians and history buffs
71	History of Science and Mathematics	6'050	138	people interested in the history and origins of science and mathematics
72	Home Improvement	56'323	39	contractors and serious DIYers
73	Homebrewing	8'603	123	dedicated home brewers and serious enthusiasts
74	Information Security	139'812	14	information security professionals
75	Internet of Things	6'283	137	users of everyday objects embedded with electronics to be sensed, monitored, and controlled remotely
76	Interpersonal Skills	15'739	92	people looking to improve their interpersonal communication skills
77	Iota	1'957	165	users of Iota, the open-source cryptocurrency for IoT that does not use a blockchain
78	Islam	16'009	91	Muslims, experts in Islam, and those interested in learning more about Islam
79	Italian Language	4'144	153	students, teachers, and linguists wanting to discuss the finer points of the Italian language
80	Japanese Language	17'704	84	students, teachers, and linguists wanting to discuss the finer points of the Japanese language

Table 2.2: Websites of the Stack Exchange Network (*continued*)

	Name	User	Rank	Audience
81	Joomla	6'613	135	Joomla! administrators, users, developers and designers
82	Korean Language	1'451	167	linguists, teachers and students of the Korean language
83	Language Learning	3'703	155	students, teachers, polyglots, and anyone interested in the techniques of second-language acquisition
84	Latin Language	2'487	162	linguists, teachers, and students wanting to discuss the finer points of the Latin language
85	Law	13'556	103	legal professionals, students, and others with experience or interest in law
86	Lifehacks	17'415	85	people looking to bypass life's everyday problems with simple tricks
87	Linguistics	12'390	109	professional linguists and others with an interest in linguistic research and theory
88	Literature	3'327	158	scholars and enthusiasts of literature
89	Magento	48'512	45	users of the Magento e-Commerce platform
90	Martial Arts	5'662	140	students and teachers of all martial arts
91	Mathematica	39'336	53	users of Wolfram Mathematica
92	Mathematics	443'045	4	people studying math at any level and professionals in related fields
93	Mathematics Educators	7'240	131	those involved in the field of teaching mathematics
94	MathOverflow	80'803	28	professional mathematicians
95	Meta Stack Exchange	204'039	10	meta-discussion of the Stack Exchange family of QandA websites
96	Mi Yodeya	9'801	119	those who base their lives on Jewish law and tradition and anyone interested in learning more
97	Monero	5'421	144	developers and users of the secure, private and untraceable cryptocurrency Monero
98	Motor Vehicle Maintenance and Repair	26'754	67	mechanics and DIY enthusiast owners of cars, trucks, and motorcycles
99	Movies and TV	43'634	48	movie and tv enthusiasts
100	Music Fans	5'507	142	music historians, critics, and fans
101	Music: Practice and Theory	33'576	60	musicians, students, and enthusiasts
102	Mythology and Folklore	3'771	154	enthusiasts and scholars of mythology and folklore
103	Network Engineering	35'568	57	network engineers
104	Open Data	15'236	93	developers and researchers interested in open data
105	Open Source	9'848	118	people organizing, marketing or licensing open source development projects
106	Parenting	21'452	76	parents, grandparents, nannies and others with a parenting role
107	Personal Finance and Money	48'756	43	people who want to be financially literate
108	Pets	8'614	122	pet owners, caretakers, breeders, veterinarians, and trainers
109	Philosophy	24'934	70	those interested in the study of the fundamental nature of knowledge, reality, and existence

Table 2.2: Websites of the Stack Exchange Network (*continued*)

	Name	User	Rank	Audience
110	Photography	48'701	44	professional, enthusiast and amateur photographers
111	Physical Fitness	18'692	81	self-employed and freelance workers
112	Physics	136'988	15	active researchers, academics and students of physics
113	Poker	4'519	151	serious players and enthusiasts of poker
114	Politics	17'739	83	people interested in governments, policies, and political processes
115	Portuguese Language	2'816	160	linguists, teachers and learners wanting to discuss the finer points of the Portuguese language
116	Programming Puzzles and Code Golf	61'867	35	programming puzzle enthusiasts and code golfers
117	Project Management	21'935	74	project managers
118	Psychology and Neuroscience	14'653	97	practitioners, researchers, and students in cognitive science, psychology, neuroscience, and psychiatry
119	Puzzling	37'002	55	those who create, solve, and study puzzles
120	Quantitative Finance	22'142	73	finance professionals and academics
121	Quantum Computing	2'464	163	engineers, scientists, programmers, and computing professionals interested in quantum computing
122	Raspberry Pi	70'154	33	users and developers of hardware and software for Raspberry Pi
123	Retrocomputing	5'494	143	vintage-computer hobbyists interested in restoring, preserving, and using the classic computer and gaming systems of yesteryear
124	Reverse Engineering	17'346	86	researchers and developers who explore the principles of a system through analysis of its structure, function, and operation
125	Robotics	14'415	98	professional robotic engineers, hobbyists, researchers and students
126	Role-playing Games	31'354	62	gamemasters and players of tabletop, paper-and-pencil role-playing games
127	Russian Language	8'424	125	students, teachers, and linguists wanting to discuss the finer points of the Russian language
128	Russian Language in Russian	10'432	116	learners of the Russian language
129	Salesforce	39'321	54	Salesforce administrators, implementation experts, developers and anybody in-between
130	Science Fiction and Fantasy	73'633	30	science fiction and fantasy enthusiasts
131	Seasoned Advice	43'770	47	professional and amateur chefs
132	Server Fault	365'338	5	system and network administrators
133	SharePoint	49'985	42	SharePoint enthusiasts
134	Signal Processing	27'399	66	practitioners of the art and science of signal, image and video processing
135	Sitecore	3'518	156	developers and end users of the Sitecore CMS and multichannel marketing software
136	Skeptics	30'847	64	scientific skepticism

Table 2.2: Websites of the Stack Exchange Network (*continued*)

	Name	User	Rank	Audience
137	Software Engineering	254'061	7	professionals, academics, and students working within the systems development life cycle
138	Software Quality Assurance and Testing	26'168	69	software quality control experts, automation engineers, and software testers
139	Software Recommendations	31'238	63	people seeking specific software recommendations
140	Sound Design	12'475	107	sound engineers, producers, editors, and enthusiasts
141	Space Exploration	17'212	87	spacecraft operators, scientists, engineers, and enthusiasts
142	Spanish Language	11'884	113	linguists, teachers, students and Spanish language enthusiasts in general wanting to discuss the finer points of the language
143	Sports	8'524	124	participants in team and individual sport activities
144	Stack Apps	35'141	58	apps, scripts, and development with the Stack Exchange API
145	Stack Overflow	8'883'496	1	professional and enthusiast programmers
146	Stack Overflow in Japanese	16'868	89	for programmers in Japanese language
147	Stack Overflow in Portuguese	86'100	26	programadores profissionais e entusiastas
148	Stack Overflow in Russian	118'769	20	for programmers in Russian language
149	Stack Overflow in Spanish	78'683	29	programadores y profesionales de la informática
150	Stellar	1'359	169	developers and users of Stellar and the Stellar Distributed Exchange
151	Super User	638'973	2	computer enthusiasts and power users
152	Sustainable Living	5'148	147	folks dedicated to a lifestyle that can be maintained indefinitely without depleting available resources
153	TeX - LaTeX	131'516	17	users of TeX, LaTeX, ConTeXt, and related typesetting systems
154	The Great Outdoors	10'704	115	people who love outdoor activities, excursions, and outdoorsmanship
155	The Workplace	61'634	36	members of the workforce navigating the professional setting
156	Theoretical Computer Science	33'286	61	theoretical computer scientists and researchers in related fields
157	Tor	14'113	100	researchers, developers, and users of Tor
158	Travel	55'032	40	road warriors and seasoned travelers
159	Tridion	2'148	164	Tridion developers and administrators
160	Ukrainian Language	1'431	168	linguists, teachers and students of the Ukrainian language
161	Unix and Linux	256'909	6	users of Linux, FreeBSD and other Un*x-like operating systems
162	User Experience	87'501	25	user experience researchers and experts
163	Vegetarianism	1'492	166	those committed to a vegan or vegetarian lifestyle and anyone interested in learning more
164	Vi and Vim	16'276	90	people using the vi and Vim families of text editors
165	Video Production	15'206	94	engineers, producers, editors, and enthusiasts spanning the fields of video, and media creation

Table 2.2: Websites of the Stack Exchange Network (*continued*)

	Name	User	Rank	Audience
166	Web Applications	117'232	21	power users of web applications
167	Webmasters	67'201	34	pro webmasters
168	Windows Phone	13'481	104	enthusiasts and power users of Windows Phone OS
169	Woodworking	4'827	150	professional and amateur woodworkers
170	WordPress Development	108'426	22	WordPress developers and administrators
171	Worldbuilding	42'090	50	writers/artists using science, geography and culture to construct imaginary worlds and settings
172	Writing	23'139	72	the craft of professional writing, including fiction, non-fiction, technical, scholarly, and commercial writing

Chapter 3

Introduction

Still to write

Chapter 4

Methods

We describe our methods in this chapter.

Chapter 5

Applications

Some *significant* applications are demonstrated in this chapter.

5.1 Example one

5.2 Example two

Chapter 6

Final Words

We have finished a nice book.