How can You Become a Software Engineer in Prestigious Companies (USA)?

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Contents

- Computer ScienceJob
- Interview process
 - Resume
 - Apply
 - Phone interview
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 - Offer
- Interview questions
 - Application software, web based software
 - System software



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About me

• Assistant Professor at Arkansas State University



* Software Engineer: 3+ years







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Working in USA as a Software Engineer

- No country boundary in Silicon Valley (USA)
 - India
 - \circ More than 50%
 - China
 - \circ Growing
 - Korea
 - \circ Potential
- Is Programming Knowledge Related To Age?
 Relationship between age and programming skills?





References

- Cracking the coding interview
 - https://www.careercup.com
 - Interview questions, salary, resume tips
- Glassdoor
 - Interview questions, salary, company information
 - <u>https://www.glassdoor.com/index.htm</u>
- LinkedIn
 - Career management
 - https://www.linkedin.com
- Indeed
 - http://www.indeed.com
 - Easy to access other resumes
- Monster.com
 - https://www.monster.com/





Computer Science major

- Once you finish your school (BS, MS)
 - Company as a software engineer
 - Government (State, DoD, DoE (Pentagon), etc.) if you are US Citizen or green card
 - Go for PhD
 - Others (business, etc.)



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Software engineer

- Role
 - Software Engineer
 - Design, development, testing, maintenance, and evaluation
 - Software Design Engineer in Testing

 Writing tools and automation
 - Software Test Engineer (STE)

 Limited programming experience
- Starting salaries in May 2016
 - O Undergrads: averaging \$72,419 (median \$71,250)
 - MS graduates: averaging \$102,249 (median \$110,000)

Ref: https://www.csc.ncsu.edu/future-students/



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Interview process







Interview process



- Total processing time: 2 months to 6 months
 - International students need 1 or 2 months more for working permission (e.g., H-1B VISA)
- You need to apply 6 months before

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- If you plan to work in December 2017, you should begin to apply around June
- But, companies have their own hiring period or urgent needs
- This means that you have to prepare (complete) your resume and interview study before June

Different working culture: Korea v.s. USA

Korea (E.g., Samsung)

- Hiring as a group
- Entering Exams
- Work as a group
- Assign a project from upper level
- Group activity
 Tutoring system
- Working 8am to 9pm
 Work at office
 No weekend guarantee
- Almost no layoff

USA (E.g., IBM, SAS)

- Hiring as an individual
- No specific exam
- Work as a team
- Each team has an individual project
 Propose a project
- Individual activity
 No tutoring system
- Working 8am to 5pm
 - Work at home
 - Monday to Friday
- Layoff



Search a job (1/4)

- Visit all company websites you want to work
 - Submit (complete) your resume for each position
 Each company has different format and requirements

Search Jo	DDS use Internet Ex	kplorer or Firefox			•	
\wp software enginee	r					
Refine Your Search		Prev 1 2 3 4 43 (Clear All x)	Google Careers Search Favorites	Fields of work Locations How we hire Stur	dents Jobs	View
Posting Type	0	Title Score	Q softwar	re engineer	Mountain View, CA, USA	
Location	0	Senior Software Engineer * * * *	Roles 🔻 💈	X 2 Divisions Sort relevance MORE FILTERS		
Experience Level	•	The main responsibilities for this position are: Analyze of SW requirement document. Follow SW development pro- switch drivers, do the unit test/integrated test and main schedule with high quality. Troubleshoot or on-site sup Provide technical support and training to the field engle	G	Software Engineer, Corporate Engineering Google – Mountain View, CA, USA As a software engineer, you will work on a specific project o our fast-paced Software development experience in one of	ritical to Google's needs with opportunities to switch teams and projec or more general purpose programming languages.	ts as you and
Job Area	0	Engineering:Software JMS degree in Electrical <mark>Engineering</mark> , Computer S work	G	iOS Software Engineer , Mobile Applications Google – Mountain View, CA, USA	that halp millions of neople around the world, and collaborate with other	
Jobs You May Be Interested In CPU Performance Engineer	Powered by Linked 📭 -	Software Test Engineer - $\star \star \star \star$ (Software Quality Assurance Engineer)	C	Software Engineer, Accessibility	n Objective-C or Swift using iOS or OS X frameworks.	

As a **software engineer**, you will work on a specific project critical to Google's needs with opportunities to switch teams and ... retrieval, natural language processing, networking, developing large software systems, and/or security **software development**.



Which company?

https://www.careercup.com/categories

Companies A9 (26)

AMD (8)

ASU (4)

Accenture (38)

Adobe (447)

Akamai (34)

Amazon (4238)

AppNexus (2)

Ask.com (1)

Auto NInia (5)

BT (4)

Big Fish (9)

Boeing (5)

Broadsoft (2)

BrowserStack (1)

CDAC-ACTS (3)

CGI-AMS (10)

Cadence Inc (6)

CapitalIQ (39)

Caritor (2)

Contro (2)

CSC (4)

Blue Jeans (10)

Athena Health (4)

Autonomy Zantaz (9)

Bank of America (14)

Barclays Capital (28)

Boomerang Commerce (5)

Axiom Sources (2)

Argus (1)

American Airlines (14)

Arista Networks (36

Achieve Internet (28)

Alliance Global Servies (2)

Top Companies Amazon (4238) Microsoft (1990) Google (1227) Bloomberg LP (653) Adobe (447) Facebook (396) Yahoo (280) Goldman Sachs (230) Epic Systems (217) **NVIDIA (201)**

More Companies »

ADP (20) ASAPInfosystemsPvtLtd (3) Abs india pvt. ltd. (3) Accolite software (2) Adap.tv (4) Advent (4) Advisory Board Company (2) Agilent Technologies (22) Alcatel Lucent (13) Altera (3) Amdocs (18) Apache Design (2) Apple (119) Aricent (18) Aristocrat Gaming Aspire Systems (1 Atmel (1) Automated Trader: Autoportal.com (1) **BMO Harris Bank** Baidu (2) D2L(1) Bankbazaar (4) Bazaarvoice (11) Bloomberg LP (65) Bocada (6) Booking.com (15) Brainware (3) Brocade (2) CCN (1) CDK Global (1) CMC LTD (1) CSR (1) Capgemini (8) CareerCup (8) Cavium Networks Cerhenue Canital I

Cerner Corporation (8) Chelsio Communications (5) Chronus (7) Citigroup (39) Citrix System Inc (38) Cloudera (5) Cognzant Technology Solutions (14) Computer Associates (3) Coupon Dunia (7) Credit Suisse (10) Crompton Greeves (1) Defense Research and Development Organization of India (1) Denmin Group (4) Did-it.com (3) Directi (72) Dover Organization (4) Druva Software pvt ltd (1) EMC (27) Eatclub (2) Egenera (1) Epic Systems (217) Ericsson (4) Expedia (97) Fabrix (2) FactSet Research Systems. Inc (13) Fiorano (1) FlexTrade (17) Fortinet (4) Future Group, Mumbai (3) Eynanz (1)

Chegg.com (3) Chicago Mercantile Exchange (10) Cisco Systems (72) Citrix Online (11) Clean Power Research (3) Cloudmere, Inc. (1) Collective (9) Continental (1) Coupondesh (5) CrimsonLogic (1) Cubic Transportation Systems Limited (1) Daptiv (4) Deloitte Consulting LLP (7) Delve Networks (2) Deshaw Inc (32) Digital Insight (1) Dobuki Studio (2) Dropbox (4) EEI (8) EZ Prints (2) Ebay (131) Electronic Arts (19) Epsilon (1) Eterno Infotech Pvt Ltd (1) F5 Networks (6) Facebook (396) Fair Issac (3) First Orion (2) Flipkart (176) Future Advisor (1) Fuze (1) GE (General Electric) (13)

Top Jobs

Software Engineer / Developer (7897)

Software Engineer in Test (810)

SDE1 (555)

Developer Program Engineer (443)

SDE-2 (399)

Software Engineer (341)

Financial Software Developer (292)

Software Developer (268)

Intern (233)

Java Developer (206)

More Jobs »

- Location (major cities):
 - WA (Seattle), CA (Silicon Valley, San Diego), OR, TX (Austin, Dallas), NC (RTP, Raleigh), MA (Boston), NY (NYC, New Jersey), FL

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Company I applied

- More than 30 companies and 300 positions
 - I preferred system company
- I had phone interviews in these companies





Search a job (2/4)

• Read job descriptions

Software Engineer, Corporate Engineering

Google Software Engineering Mountain View, CA, USA



Google's software engineers develop the next-generation technologies that change how billions of users connect, explore, and interact with information and one another. Our products need to handle information at massive scale, and extend well beyond web search. We're looking for engineers who bring fresh ideas from all areas, including information retrieval, distributed computing, large-scale system design, networking and data storage, security, artificial intelligence, natural language processing, UI design and mobile; the list goes on and is growing every day. As a software engineer, you will work on a specific project critical to Google's needs with opportunities to switch teams and projects as you and our fast-paced business grow and evolve. We need our engineers to be versatile, display leadership qualities and be enthusiastic to tackle new problems across the full-stack as we continue to push technology forward.

Corporate Engineering is an extremely diverse organization responsible for inventing, building, implementing, and supporting all of Google's internal tools and systems. In addition to making Googlers happier and more efficient, they manage the integration of acquired companies, provide data services, ensure corporate compliance, and run several programs.

Google is and always will be an engineering company. We hire people with a broad set of technical skills who are ready to tackle some of technology's greatest challenges and make an impact on millions, if not billions, of users. At Google, engineers not only revolutionize search, they routinely work on massive scalability and storage solutions, large-scale applications and entirely new platforms for developers around the world. From AdWords to Chrome, Android to YouTube, Social to Local, Google engineers are changing the world one technological achievement after another.



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APPLY

Search a job (3/4)

Read job descriptions: Google



- · Write server-side code for web-based applications, create robust high-volume production applications, and develop prototypes quickly.
- Build our platforms, systems and networking infrastructure using your strong background in distributed systems, OS/kernel, network system design, and large scale storage systems.
- Build internal systems used by thousands of Googlers around the world with your domain expertise in HR, Staffing, Legal, and all other corporate functions.
- Specialize in UI development with AJAX and similar technologies, client application development for Windows/Mac (Chrome, Toolbar, etc.), embedded
 systems and mobile apps (Android), developer tools (IDEs, large-scale build systems, compilers), internationalization.

Qualifications

Minimum qualifications:

- · BS degree in Computer Science, similar technical field of study or equivalent practical experience.
- Software development experience in one or more general purpose programming languages.
- Experience working with two or more from the following: web application development, Unix/Linux environments, mobile application development, distributed and parallel systems, machine learning, information retrieval, natural language processing, networking, developing large software systems, and/or security software development.
- Working proficiency and communication skills in verbal and written English.

Preferred qualifications:

- Master's, PhD degree, further education or experience in engineering, computer science or other technical related field.
- Experience with one or more general purpose programming languages including but not limited to: Java, C/C++, C#, Objective C, Python, JavaScript, or Go.
- Interest and ability to learn other coding languages as needed.



Job description: Qualcomm

Job Detail **MyProfile** You may also be interested in: Job Id E1946030 Job Postings Job Title Engineer / Senior Software Engineer - Top Secret Clearance Preferred Entry Level / Senior Software Engineer -(Qualcomm San Diego, CA) **Top Secret Clearance Preferred** (Boulder,CO) Post Date 11/02/2016 System Test Engineer (US Top Secret Clearance Preferred) Company -Qualcomm Technologies, Inc. - Government System Test Engineer (US Top Secret Division Clearance Required) Boulder, CO Layer1 Software Basestation Engineer -Job Area Engineering - Software 4G/5G Embedded SW and Automation Test Location California - San Diego Engineer Job Overview QUALCOMM's Cyber Security Solutions (QCSS) division develops special products based on its wireless terrestrial and satellite communication technologies for the military, federal, local, and foreign governments. QCSS also Powered by does specialized work for the US government based on QUALCOMM's core Jobs You May Be Interested In Linked 📆 technologies. Applicants selected will be subject to a government security investigation and must meet eligibility requirements for access to classified CPU Performance Modeling G Engineer information. Must be a U.S. citizen and eligible for a U.S. Government Qualcomm - Raleigh, NC, US security clearance. QCSS is looking for a skilled software engineer to join a Hardware Emulation Engineer small, close-knit team, developing precision custom applications. In this role you Q (Multiple... will be developing for the latest mobile and wireless gadgets. Satisfy your desire Qualcomm - Raleigh, NC, US to tinker, experiment and code solutions for the unique set of challenges faced Sr Software Engineer -**ARKANSAS STATE** COMPUTER SCIENCE UNIVERSITY

Job description: Qualcomm

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Minimum Qualifications	 MS Degree preferred or minimum BS degree with 2-5 years industry experience required in one or more of the following areas: Experience designing and implementing software systems, preferably in C Experience with debuggers (Assembly) Experienced use of scripting to automate development tasks Experience with computer architectures Experience with operating systems
Preferred Qualifications	 MS Degree preferred Assembly-level debugging preferred Curiosity and a passion for software development Work effectively with others in a small, dynamic, results oriented environment Secure coding practices Familiarity with embedded system development Identifying and remediating security vulnerabilities Previous experience with ethical hacking and/or testing vulnerabilities Experience reverse engineering of malware Client/Server socket programming
Education Requirements	Required: Bachelor's, Computer Engineering and/or Computer Science and/or Electrical Engineering Preferred: Master's, Computer Engineering and/or Computer Science and/or Electrical Engineering



Search a job: main components (4/4)

- Read job descriptions. Example, for google
 - Responsibilities
 - \circ Write server-side code for web-based...
 - Qualifications
 - **o BS degree in Computer Science**
 - \odot Experience working with two or more:
 - Web application development, UNIX/Linux environments
 - Preferred qualifications
 - Master's, PhD degree, further education
 - Java, C/C++, C#, Python







Submit your resume (1/4)

- Compare the job description with your resume
- Update (modify) your resume based on
 - Job description
 - Keyword
 - Minimum requirement
 - Preferred qualification



Submit your resume (2/4)

- What is a good resume?
 - 1. One page resume or two
 - 2. No Objective
 - 3. Use a Resume Template with columns
 - 4. Use Tables
 - 5. Short Bullets
 - 6. Accomplishment oriented
 - 7. Qualify
 - 8. GPA if it's at least 3.0 or higher
 - 9. Projects
 - 10. Additional experiences
 - 11. Languages and Skills

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12. What did you not include?

Reference: https://www.careercup.com/resume

123 Spruce St, Apt 35 Philadelphia PA 19103	GAYLE L. MCDOWELL	(555) 555-12: gayle@careercup.co
Software Engineer, Intern	Apple Computer	Summer 200
iChat AV		
Reduced time to render the u Implemented iChat integratio saved chat transcripts and pro Redesigned chat file format a	ser's buddy list by 75% by implementing prediction n with OS X Spotlight Search by creating tool whit ovides metadata to a system-wide search databas nd implemented backwards compatibility for sear	on algorithm. ch extracts metadata from se. rch.
Lead Student Ambassador • Promoted to Lead Student An • Created and taught Computer	Microsoft Corporation nbassador in Fall 2004; supervised 10 – 15 Studen r Science course, CSE 099: Software Design and D	Fall 2003 – Spring 200 It Ambassadors evelopment
Head Teaching Assistant • Courses: Advanced Java III, So • Promoted to Head TA in Fall 2	University of Pennsylvania oftware Engineering, Mathematical Foundations o 2004; led weekly meetings and supervised four ot	Fall 2001 – Spring 20 of Comp. Sci. I & II her TAs
Software Design Engineer, Inter Visual Studio Core (Summer 200	n Microsoft Corporation	Summers 2001 - 20
Implemented a user interface Created service to provide gra Programmer Productivity Resea	for the VS open file switcher (ctrl-tab) and exten adient across VS and VS add-ins. Optimized servic rch Center (Summers 2001, 2002)	ded it to tool windows. e via caching.
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Submit your resume (3/4)

- You do not need to add all requirements
- Each person may have different **strong** points
- How do you know if your resume is **good**?
 - If you are contacted by HR you applied
 - It may not be easy to make a good resume
 - Although your resume looks good, you may not know until you apply
 Although you have good skills, HR
 - may not recognize how good you are
 - Your resume should contain your strong points

i	123 Spruce St, Apt 35 Philadelphia PA 19103	GAYLE L. MCDOWELL	(555) 555-12 gayle@careercup.co		
	EMPLOYMENT	(3)			
1	Software Engineer, Intern	Apple Computer	Summer 200		
\frown	iChat AV				
5)	 Reduced time to render the use 	r's buddy list by 75% by implementing predictio	n algorithm.		
$\overline{}$	 Implemented iChat integration with OS X Spotlight Search by creating tool which extracts metadata from 				
	 Redesigned chat file format and 	I implemented backwards compatibility for sear	n. Ih.		
	Land Student Ambarrador	Microsoft Corporation	Eall 2002 - Spring 200		
	 Promoted to Lead Student Amb 	accador in Fall 2004: supervised 10 - 15 Student	Ambassadors		
	 Created and taught Computer S 	cience course, CSE 099: Software Design and De	velopment		
	Head Teaching Assistant	University of Pennsylvania	Fall 2001 – Spring 200		
	- Courses: Advanced Java III, Soft	ware Engineering, Mathematical Foundations of	Comp. Sci. I & II		
	 Promoted to Head TA in Fall 200 	04; led weekly meetings and supervised four oth	er TAs		
1	Software Design Engineer, Intern	Microsoft Corporation	Summers 2001 - 200		
	 Implemented a user interface for 	/ or the VS open file switcher (ctrl-tab) and extend	ed it to tool windows		
6)	Implemented a user interface for the vs open file switcher (ctri-tab) and extended it to tool windows. Created service to provide gradient across VS and VS add-ins. Ontimized service via caching				
	Programmer Productivity Research	h Center (Summers 2001, 2002)			
	 Built app to compute similarity of all methods in a code base; reduced time from O(n²) to O(n log n). 				
	 Created test case generation tool which creates random XML docs from XML Schema 				
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Submit your resume (4/4)

- You should update your resume whenever you have something to update
 - Job description
 - Keyword
 - Personal information
 - Project achievement
 - Award
 - etc.



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donghoon-i2-CISCO-0624.pdf
donahoon-i2-emc-0607.pdf
donghoon-i2-intel-0607.pdf
```

donghoon-i2-network-1002.pdf

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HR screening

- HR screens resume
 - The competition rate is really high
 - \odot Select **ONE** out of several hundred (more than 300 to 1)
- Once HR selects your resume, HR sends your resume to a hiring manager
- If the hiring manager likes your resume, the hiring manager request a phone interview
- High chance to pass your resume from HR
 - Match keywords based on job description
 - Impressive points
 - Good school
 - \circ Good GPA (above 3.7)
 - Project experience, Work experience in known company
 - Internal Referral



Phone Interview (1/3)

- Email from HR (example from Microsoft)
 - Schedule your phone interview schedule
 - Will receive a confirmation email

crosoft Phone Interview Confirmation 1/21 🧁 Inbox 🗴	÷ 8
Jessica Seftel < @microsoft.com> to me 💌	1/17/14 🚖 🖌 👻
Hello Donghoon,	
Thank you for scheduling your interview and providing us with your phone number. Your interview has been confirm	ned!
Your interview will be held on January 21, 2014 at 10:30 AM. Interviews will be 30 minutes in length. Your interview number in which you provided.	ver will call you by using the <mark>phone</mark>
Please feel free to let me know if you have any additional questions. If there are any updates to your availability, ple possible so that I can attempt to fit you into the schedule during a time that works for you.	ease send them to me as soon as
How to prepare:	
 If you are not using a landline (recommended), then please test your cell phone reception and connectivity 30 mines to ensure that you will be able to receive the call and complete your phone interview. 	nutes prior to your scheduled interview
 During the interview: Your interviewer will be asking you a variety of questions, including those that include coding prepared to answer these questions to the best of your ability. 	g and problem solving. Please be
 Check out these resources online: The Microsoft JobsBlog for helpful interview information. Our University Recrinterview process overview and available positions. Good luck! 	ruiting page for an overview of the
Thanks!	
Jessica	

Phone interview (2/3)

Page, Erin < @amazon.com> 2/5/13 🟠 🦘 to me 🖃
Hi,
You are scheduled for a 45-minute phone interview on Wed 2/13/2013, at 1:00 PM Pacific.
Your interviewer will contact you at the phone number you have provided:
 This phone interview will be technical in nature and you should be prepared to answer questions related to the following: Data Structures Algorithms Object Oriented Programming and Design (at Amazon we primarily use C++, Java, Perl, Ruby) Problem Solving
You will have time to work through your solution before you verbally answer the questions. If possible, please be at a computer with internet connection as the interviewer may ask you to send code samples after the interview.
Let me know as soon as possible if you need to make any changes to your appointment; however, please understand that any delays to your interview scheduled interview increases the possibility that the team may move forward with other candidates. As such, we ask that you please consider our interviewer's availability before making changes.
If you have pending offers or are currently interviewing with other companies, please let me know when your deadlines are.
Also, if you need to reach me, please note that the best way to reach me is by email rather than by phone.
Thanks! Erin

Phone interview (3/3)

- Over the phone or skype
- 30 mins to 1 hour
- Interview questions
 - Algorithm, OS, Network
 - Coding question via online text editor

Poly	com Interview Link
	Katasani, Sundeep <sunder @polycom.com=""> to me 🐨 http://collabedit.com/hsc4g -Sundeep Software Dev Manager. AxisCore, CloudAxis</sunder>
	ISAS STATE

Onsite Interview (1/2)

- Once you pass a phone interview, HR sends an email for onsite interview
- Example:



Life. Connected with technology.

Hello Donghoon,

Thank you for taking the time to interview with our QCT Software team! We are impressed with your background and qualifications and would like to invite you to visit Qualcomm Incorporated located in San Diego, CA for 4-6 hours of on-site interviews. You will be meeting with various QCT team members and they will be evaluating you for all Software positions in the QCT division.

After looking into the interview team's schedules, some dates that are available are Wednesday 8/14, Thursday 8/15 and Friday 8/16.

ONSITE INTERVIEW SCHEDULING - please respond





Onsite Interview (2/2)

- 4 hours to full days (6 hours)
- One to one or one to Many (rarely)
- Meet more than 4 people
 - HR
 - Introduction about interview
 - Hiring manager
 - Culture fit, Prior experience
 - Characteristics, Personality
 - Do you like work alone or together?
 - What is your career plan?
 - » 1 year goal and 5 years goal
 - Software engineers (2 to 3)

 Coding skills, analytical ability
 Mainly, technical questions

Qualcomm @ San Diego on 8/17

- Vanessa A. Otter, Staffing Specialist
- David B. Francis, Engineer, Senior Staff
 - programming questions
 - char * strstr(const char *s1, const char *s2)
 - how to save power
- Steve Muckle, Engineer, Staff
 - CPU scheduling on XEN
 - list, array difference
 - virtual memory -> physical memory how to convert

```
int a[3] = {1.2, 2.3, 3.4};
int z;
int *p = a, *q = a;
for(int i = 0; i < 3; i++){
        printf(" %d", *a);
        p++;
}
for(int i=0; i < 3; i++){
        printf("%d", *q);
        q++;
}
z++;
printf("%d", z);
```



Offer letter

 Once you pass on-site interview, you should receive an offer letter

> 4205 South Miami Blvd. Research Triangle Park, NC 27709 November 6, 2015

Donghoon Kim 1132 Apple Blossom Ct. Raleigh, NC

RE: Employment at IBM as an Emerging Technology Institute Intern

Dear Donghoon,

I am writing to once again offer you a position as an Emerging Technology Institute (ETI) Intern. You will be reporting to me, Head of the RTP Center for Advanced Studies within ETI, working on the design and development of the IBM Middleware portfolio of solutions. This work will be consistent with your PhD degree work, and will therefore provide you valuable experience that will be relevant to your planned course of graduate studies. You will not be exposed to any import restricted technologies.



The offer and Beyond

- Offer deadlines and extensions
 - Deadline are one to four weeks
- Declining an Offer
 - Declining an offer matters
 - This is a small world; we may meet again.
- Financial Package
 - Negotiate salary
 - Signing bonus, relocation, Stock options
 - Cost of living difference
- Career Development
 - How good does the company's name on my resume?
 - How much can I learn?
 - What is the promotion plan?
 - etc.



If no offer

- Some companies have a rule for those who are rejected
 Cannot apply in 6 months
 - Apply after 6 month later (e.g., Google, Microsoft)
- Ask when you can re-apply
- Do NOT give up hope!
- For me,
 - I have applied more than 300 positions
 - Spent about full 8 months only for interview



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Phone and onsite interview

Phone Interview	Onsite Interview
• 30 mins to 1 hour	 Half days (4hours) to full days (6 hours)
 One to One interview Over the phone or skype 	 One to One or One to Many More than 4 people
 Interview questions Fundamental questions Coding questions via text 	 Interview questions Fundamental questions Discussion
editor	Coding on the white

Note: Both Interview questions are **almost** same, but details

board



How to prepare interview questions

- Non-technical questions
 - With HR and Hiring manager
 - Culture fit, personality
 - \odot Prior working or project experiences
 - They are asking questions based on your resume
- Technical questions
 - With software engineers (technical lead)
 - \odot They are very smart and experts in their domain.
 - However, we may have the same level (fundamental) knowledge in terms of technical questions

Be prepared! How?



Non-technical questions

- HR
 - When can you begin to work?
 - When do you graduate?
 - Can you relocate?
 - If you are an international student, they ask about your visa status
- Hiring manager
 - What is my dream job after finishing your school?
 - What is your plan for next 5 years and 10 years?
 - What do you know about my company?
 - NetApp
 - $\,\circ\,$ Why do you want to work at NetApp?
 - What did you do at school ?
 - $\,\circ\,$ Project experience or research experience
 - $\,\circ\,$ Most of the questions are based on your resume





- Types
 - Data structures (Linked list, Tree, Array, String)
 - Algorithm and concepts (bit manipulation, sorting, searching, OOP)
 - OS (critical section, deadlock, semaphore, mutex)
 - Network (TCP vs. UDP)
 - Programming languages (C++, Java, etc)
 o virtual function, synchronized
 - Others (difficult)
 - Design pattern, Dynamic programming, etc



Remember:

Even **MIT** students study these questions to get a job!





Remember:

Even MIT students study these questions to get a job!



- Technical questions types are a little different:
 - Dedicated software company (Microsoft, Google, Facebook, Bloomberg LP, etc)
 Algorithm, design pattern
 - Dedicated system software company (Amazon, Qualcomm, Intel, NetApp, EMC, etc)
 OS, Network



- Alarm.com
 - Java: what is the difference between interface and abstract?
 - What is the singleton pattern?
 - What is the difference of C++, C#, and Java?
- Intel (parallel team)
 - Intel architecture
 - What do you know about Cache coherence?
 - What is virtual function and template?
- Amazon
 - What is the object-oriented programming language?
 - What is interface and abstract?
- NetApp
 - What is the difference thread and process?



- Microsoft
 - Singleton pattern
 - How do you find a circular in a linked list?
 - What is volatile variable?
- NetApp
 - How does cache work in CPU?
 - What is set, map, array, linked list?
 - What is lock and mutex lock, read/write lock?
 - What is throughput and latency?
- EMC
 - static variable
 - OS: mutex, semaphore, lock, unlock
 - What is Memory leak and function pointer?
 - Pointer questions



Programming questions

- [Amazon] Please write a function that takes input from a paragraph of text and outputs the number of occurrences of each word in the paragraph.
- [NetApp] find "aps" in a given input
 - string S = "netappnetappnetapp....."
- [Datami]
 - Given s and t are null terminated character arrays ,what does the following do?

while((*s++ = *t++) != '\0');

 Implement a function that takes in two integers and outputs the number of bits that are the same in their binary representations. Use bit operators whenever possible.



Programming questions

- [Juniper Networks] Write a program to check if the system uses Big endian or little Endian
- [Amazon] Write a function to generate Fibonacci number



How to resolve programming questions

- Understand questions
 - ask to your interviewer if you do not fully understand
 - Discuss with your interviewer
 - Add comments (e.g., start with // compare two numbers)
- Programming body:
 - Input (what is input parameters?)
 - Error checking routine for invalid inputs
 - Body (main algorithm)
 - Return (output)
- Create "test cases"
 - Invalid input
 - Extreme case
 - Valid input



Technical questions: useful links

- Recent Interview questions
 - https://www.careercup.com/page
- Coding practice
 - <u>https://codility.com</u>
 - <u>https://leetcode.com</u>



Plan your career

- Graduation is not an end. But, it is a new start
- Maintain your GOOD GPA
- Focus on classes you are taking now
- Set up your timeline until graduation;
 - You may need your daily and weekly schedule as well
 - 7 habits of highly effective people
 - 1. Be proactive
 - 2. Begin with the End in Mind
 - 3. Put First Things First
 - 4. Think Win-Win
 - 5. Seek First to Understand, then to be Understood
 - 6. Synergize
 - 7. Sharpen the Saw



	URGENT	Not urgent
IMPORTANT	Urgent and important	Important but not urgent
Not important	Urgent but not important	Not urgent and not important

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What should we do now?

- Focus on classes you are taking now
 - Please, do not try to learn a top-notch technique
 - Fundamental knowledge is more important than top-notch technique
- Maintain a good GPA
 - E.g., Undergraduate: > 3.5, Graduate: > 3.7
- Improve your programming skills
 - Pick one programming language and go into deep
 - Spend a lot of time on writing code
- Do not take many classes if you are close to graduate (last semester)
 - Build your good resume
 - Start a group study
 - $\,\circ\,$ Study together with less than 3 students
 - Your friends are not your competitors, but colleagues in the future





Hope does not disappoint us -Romans 5:5



