1)**What sparked your interest in computer science? How did this lead you to major in computer science and what do you hope to accomplish with your degree? In your answer, please describe how your experiences have influenced the goals you have for yourself.**

Until my freshman year of college, I was undecided about what I wanted to be. I had seriously considered becoming a medical doctor. As a high achieving high school age student, I took many college level science classes and earned college credits. However, by the time I started college, I was finding science lab hours too long and not that interesting. This led me to seriously re-evaluate my interests and begin exploring other possibilities. At my college's career center, I took a test that suggested potential fields to choose based on interests and personality. Computer Science

was the first option and medicine was somewhere lower on the list. This result gave me some

ideas of possible subjects to try.

I enrolled in my first Computer Science course in the spring of my freshman year as an experiment. My computer science class was a welcome escape from long hours in science labs. Every project assigned in the class allowed me to be creative and make the final results unique to me. On top of that, I could work on all these assignments from anywhere, including my room! I also was fascinated by the power of our first encoding program. At the end of the semester, the course professor encouraged me to continue taking Computer Science classes. This encouragement led me to major in the subject.

My inclination towards software engineering began during a summer internship in 2014. Our team had a mentor who was a scientific programmer and had worked at the National Radio Astronomy Observatory for twelve years. In one of his group emails, he had beautifully written our group members' strengths. One of our brilliant group member had earned an engineering degree and he had mentioned how engineers can solve any problem because that is what they have learned to do. This email was a huge push for me to pursue engineering degree, considering I love to solve problems.

Hence, with a degree in Software Engineering, I would like to work in the Software Engineering field. I would like to contribute to both the number of women engineers in the field, as well as be an inspiration for young ladies interested in STEM. Another important mission for me is to bring awareness to young Nepalese students, especially girls, to enter into this exciting field of Computer Science.

2) **Please give us 1-2 examples of how you have exhibited leadership. Explain how you were influential, what you were trying to achieve and the impact you had as a result. These need not be demonstrated through formal or traditional leadership roles. Think broadly and examine the many ways you are having an effect on the members of your technical community, your university, or your broader community.**

Each year senior computer science majors at my college participate in a substantial, yearlong software development project. Students work in small groups from conceptualization and design through to implementation and delivery of a real software application.

At the beginning of the semester, my computer science peers and I pitched our project ideas and then formed teams for our senior project. My team's proposal was to make a web application that would update football player's statistics while on the field, in real time. However, a week after finalizing our team members and submitting our project proposal, our team leader had to unexpectedly take a leave of absence for a semester. Since he owned the project idea, we could not proceed with the proposed project. Two weeks into our project we had to start over.

In order to maintain the excitement and energy the team had in the previous project, and to catch up from the lost weeks, I stepped up to be our team’s leader. After considering new ideas proposed from different college departments, we voted to accept a project with the Center for Global Learning department to develop a college-based version of trip advisor. This web application would give college students access to a database of recommendations for housings and restaurants when they travel to different parts of the world for their study abroad programs.

After discussing the logistics needed for the project, from languages to deadlines, I set up a Github page, completed all the requirements for writing the proposal and I set up internal milestones for the project so team members could begin coding. So far we have managed to meet our key milestones.

Another significant leadership role I had was when I wrote a project proposal selected for the 2015 Clinton Global Initiative conference meeting held at the University of Miami, Florida. The project originated as a result of having met a Nepalese migrant women at an international airport and listening to her heart-wrenching story of economic hardship. The project goal is to empower youth of rural Nepal through a sustainable cardamom plantation. My work ethic and vision for the project were influential attributes when forming a strong team of three. Since we had started our project proposal early, we were able to submit our proposal in time to meet an early deadline to request and receive travel assistance.

Though the project did not make it to the final round to receive seed funding, my team and I were able to present and share our proposal at the conference. The project led me to research in-depth how to establish a cardamom plantation in Nepal and its market value, while also shedding a light on the current exploitation of unskilled migrant workers and the exploitation of unskilled migrant workers in Nepal. Moreover, it gave me another meaningful reason to work hard so that one day I can be in a better position to make a positive difference in Nepal. This project is on my bucket list.

3) **Imagine that as a Anita Borg Memorial scholar, you are given the opportunity to speak to a group of female first year computer science students to encourage them to pursue their study in the field. They want to know what is exciting and interesting about computer science, and are specifically interested in hearing about your experiences and accomplishments. With this audience in mind, please describe the most significant computer science project or research you have worked on, how you approached key technical challenges, and what you gained from the experience. It might have been a class assignment, a research project or work as an intern. If the project was team-based, help them understand what it's like to work on a team by specifying your individual role and contributions in the project.**

Among the many computer science projects I have completed as an undergraduate, the most significant project is one of my earliest projects. It was called an XKCD password generator. This project was special because this was the first dynamic web application I had made on my own that could generate passwords. Passwords are an integral part of our privacy and making a machine to generate as many as you want that suits your taste was an accomplishment. This project also boosted my confidence to continue pursuing the subject.

In my web development class, we used python as a programming language and heroku to deploy our applications. The key technical problems at this stage were becoming familiar with the different technical terminology and how they are used in a web application. In the class we also started using git commands to push our projects to a git repository. This led me to understand git error messages and troubleshoot them. With this overflow of jargon terms and new ways of conceptual thinking I had to work harder to get the hang of them in order to proceed to more challenging projects.

When I had difficulty understanding problems, both conceptual and technical, I started reading documentation and examples of those specific topics. Tutorial sections of documentation were really helpful as I could see what I read in documentation being implemented in examples. The second source was to watch a video on the topics I was struggling to understand. When I had questions or doubts, stack overflow was another good resource.

From my experience of doing projects in web development class, the most valuable lesson I learned was to do incremental programming. This way I became a better debugger and accelerated the process of turning concepts into a real working program. The class was definitely challenging and a lot of learning occurred for me. When I reflect back, I am proud to say that I was motivated to work hard which led me to ace the class.

4) **Dr. Anita Borg proposed the "50/50 by 2020" initiative, so that women earning computing degrees would be 50% of the graduates by year 2020. However, the percentage of computer science degrees earned by women is still far from 50% throughout the world.**

A) **Based on your experience/observation at your university, what percentage of women study computer science?**

My graduating class has approximately 500 students. Approximately 20 of these students are majoring in Computer Science, with four being women. So 20% of our graduating Computer Science majors are women.

B)**What is your university doing to encourage women to select technical degrees?**

We have a lot of support for women in science and math fields. In the science department we have many female professors which is helpful for my female friends to relate to as positive role models. In the math department we have two female professors and one of them teaches an upper level math course. The math department also has a scholarship for the outstanding female math major student.

The computer science department in my college has been a small department. With current awareness about the importance of learning to code, the number of students enrolling in computer science has increased. Just a few years ago we had a graduating class of less than 10. The number of computer science graduates currently is 20 which is a huge improvement. My first computer science professor encouraged me to take more computer science classes and he continues to encourage me. There were no female computer science professors during my college years. The department has just hired one and she will begin teaching introductory classes beginning the spring of 2016.

C)  (**What cultural factors in your local community influence fewer women to select technical degrees?** **Please specify if you are discussing your hometown/country, university community, etc.)**

It has been my experience at Luther College that people have the perception that coding is challenging and hence they will not understand it. They are even frightened to try out pre-introductory classes. I see this pattern mostly among my female friends. I finally succeeded in persuading my roommate to take a pre-introductory class and I have promised to help her learn the material, if needed.

D) **If you were the head of the computer science department at your university, what initiatives would you start to reverse the trend and increase the involvement of women in computer science?**

If I were the head of the computer science department I would make sure that there is at least one female professor in the department. I would make course syllabi friendly to both genders by making projects interesting and applicable to all students. I would also encourage teams to be as diverse as possible so that students take advantage of learning from each other. I would also start a hack-a-thon in the college to create more buzz about the of importance of learning to code, while simultaneously giving time to projects that are unrelated to college courses. Finally, I would seek out alumni women computer science majors for young women to conduct informational interviews to learn about their career paths and to serve as mentors to young women majoring in computer science.

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**The four essay questions below are intended to assess your academic excellence, proven leadership abilities and passion for Computer Science.**

• **Please use one document to capture all four essay questions and upload to the online application in PDF format.  
• Please copy and paste all essay questions and write your responses underneath the question.**• Each response to the four questions below should be 300-500 words each. For question #4, the total of the sub questions should be 300-500 words.