IGN – Code Foo Application

1) I am writing to apply for the Code Foo 9 – Engineering Application opportunity, as advertised on your website. I am a first-year graduate student at San Jose State University, studying master's in Computer Science and have a high interest for working inside the technology field. I have strong expertise in HTML5, CSS3, JavaScript, Bootstrap, Java, C++, Python, Adobe Photoshop CC, Axure RP (Prototyping tool), SQL and Android Studio. I am confident I will be an excellent fit for IGN and especially the Code Foo program, due to the extensive experience that provided me with technical and innovative skills necessary to successfully provide multifaceted technical solutions across a wide range of software platforms.

My connection with IGN involves searching for game guides, looking at news articles about specific games that I enjoy playing and watching videos of game walkthroughs. I very much enjoy doing this routine because it gives me a sense of adventure and curiosity. For example, I used to play 'Assassin's Creed 2' and would search for hidden glyphs and follow a map of feathers that I could collect and unlock special gear. Additionally, it makes me want to buy the game and enjoy it for myself after seeing others play it. I still play Pokémon Go and visit the IGN website to look for new details of Pokémon and other events that are accessed through accomplishing tasks. IGN is definitely one of the websites that I visit in my daily routine. From the current news, I am very much looking forward to playing 'Sekiro – Shadows Die Twice' because I am a fan of adventurous and hack-and-slash games which have fast combat.

At Fujitsu Laboratories, I was responsible for leading the development of projects from several leading companies in Europe. One of them involved designing and developing a system for smart cabinet to detect and count stock in real-time and submit the data to a datacenter using REST web services. This experience taught me researching for solution and strengthened my programming quotient. Furthermore, it opened up a new area for me by working with IoT devices such as Raspberry Pi 3 to process a lightweight neural network for faster classification time.

Throughout my graduate academic venture, I have practiced different technologies such as Hadoop, Apache Hive, React and Node.js. I was involved in a team project for the visualization of current Twitter trends using Apache Hive. The main challenges that I faced during this project were filtering the noisy data while live Big Data is being generated. Furthermore, the technologies used were not present in my knowledge pool hence, I took the motive to learn React, Hive, Node.js, Deck.gl and Mapbox. The successful completion of the project and the presentation towards students and professor resulted in the project receiving the top award for 'Best Technologies Used'.

My involvement in 2D and 3D game design and development includes several projects that I undertook to get a good understanding in this particular field. The game design and development were successfully completed in Unity 3D/5, Unreal Engine and

OpenFrameworks. Therefore, I have a good knowledge with C++ and C# which are the key programming languages in the game development field. More work examples/projects can be found on my portfolio website and the Github page.

Together with my analytical and technical aptitude, fast learning ability and communication skills, I am confident that I will make a positive contribution to the company. My resume is enclosed for your review. Thank you for your time and consideration. I would relish the opportunity to meet you through the Code Foo program and discuss my resume in further detail.

2) Assuming, the Pokeballs haven't been stolen by another enemy organization… We can deduce the amount of Pokeballs that have been stolen from the Coit Tower by finding the volume of Coit Tower and a Pokeball. Thus, we can divide the volume of Coit Tower by the volume of Pokeball which finds the number of Pokeballs that can fit in the Coit Tower hence, that can be stolen by Team Rocket! However, there are different answers in this scenario because a Pokeball can be of different sizes (small when stored on belt/pocket and large when pressed using the middle button). Therefore, there are 2 different volume sizes. Secondly, Coit Tower has the following figures:

Height Architectural: 64m / 210 ft
Height Occupied: 54.2m / 178 ft
Height to Tip: 64m / 210 ft
Surface Area: 74,050 ft^2
Radius of Cylinder/Coit Tower: 74050 / 210 = ~46.03
Therefore, Volume of Cylinder/Coit Tower: Pi * r^2 * h = Pi * $(46.03)^2$ * 210 = ~1397820 ft^3

A Pokeball is about the same size as an Orange. A Pokeball has the following figures:

Diameter: 2.50 inch
Circumference: 7.85 inch
Volume: 8.18 $inch^3$

Convert from ft to inch: 16773840 $inch^3$ / 8.18 $inch^3$ = ~2050591.68704 (Pokeballs)

Therefore, ~2050592 Pokeballs can fit inside the Coit Tower and hence, Team Rocket can steal if/when they manage to wake up Snorlax and reach the Coit Tower.

3) 1) POJO class:
Members: Armor Type, Cost in Crowns, Armor value and getter setter for all
For each name, making a new object for POJO class

2) Storing the inventory in Dictionary:

Four ArrayList for each Armor type and stores Name (inventory Name)

List of ArrayLists: helmet, leggings, chest, and boots

Algorithm:

```
// to find list with maximum armor value
max = Integer.MIN_VALUE
// list of Names based on maximum armor value
List_with_max_armor_value = null

Main Function():
        For each element h in list helmet: call Leggings(h)

Function Leggings(h):
        For each element l in list leggings: call Chest(h, l)

Function Chest(h, l)
        For each element c in list chest: call Boots(h, l, c)

Function Boots(h, l, c):
  For each element b in list boots:
    // check whether crown value < 300
    Sum of crown_value for h, l, c and b
    if(Sum < 300) {
        // finding 5th armor
        Object fifth_armor: Get fifth_armor(300-sum, h, l, c, b)
        // if fifth armor is found change the global max for armor value
        if(fifth_armor is not null) {
            // function call for finding 5th armor
            armor_value = get armor value for all the objects: h, l, c, b and fifth_armor
             if(armor_value > max){
                    max = armor_value
                    List_with_max_armor_value = [h, l, c, b, fifth_armor]
             }
        }
    }
Function return List_with_max_armor_value

// function to find 5th armor
Function Get_fifth_armor(value, _h, _l, _c, _b):
        for(reverse: every element h in helmet):
                if(crowns of h is less than value and not _h):
                        return h:
        for(reverse: every element l in leggings):
                if(crowns of l is less than value and not _l):
                        return l:
        for(reverse: every element c in chest):
                if(crowns of c is less than value and not _c):
                        return c:
        for(reverse: every element b in boots):
                if(crowns of b is less than value and not _b):
                        return b:
```

```
        return null;
```

Approach: DFS (Depth First Search) approach

n = number of inventories
Time Complexity: O(n^5)
Space Complexity: O(n)