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Dear Elizabeth:

I am writing in hopes of an internship at Avalanche Software. Unfortunately, I noticed in the career section, there isn't currently an opening for software engineers. With my strong passion for programming and game development, I would provide a beneficial asset to your company.

After my AS in Computer Science is received May 2012, I will be attending Weber State University to complete a Bachelor's in Software Engineering with a strong emphasis on Game Development and Web Production.

My current programming experience consists of C#, Java, C++, and Python. My time outside of normal college coursework has consisted of developing a Windows 7 Phone game written in C# using the XNA Framework. Also, my experience with Adobe Illustrator and Photoshop increases my ability to work in a gaming environment.

You may access my current portfolio at jerronjames.yolasite.com and contact me directly at 801.910.5555 or jjames@gmail.com. Thank you for your time, and I look forward to having an opportunity to speak with you directly.

Sincerely,

Jerron James
Enclosure

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Summary: Here we describe the term game developers frequently use: a “Sprite”. The focus of this definition description is for people who would not regularly encounter such jargon in the real world.

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Summary: Many people don't understand the process of debugging software. However, debugging is a large focus among software developers. The focus of this overview is to describe what debugging software actually consists of.

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Game Development

What the Heck is a Sprite?

What is a sprite? Let's see how the American Heritage Dictionary describes a sprite:

Sprite *n.*

1. A small or elusive supernatural being; an elf or pixie.
2. An elflike person.
3. A specter or ghost.
4. *Archaic* A soul.
5. *Meteorology* A large, dim, red flash that appears above active thunderstorms in conjunction with lightning.

fig. 1 Definition of a sprite.

Well, that makes a little sense. There can be elves and small supernatural beings inside a game. However, we're not talking about fairies or ghosts. We're not even talking about a soda. "In computer graphics terms, a sprite is defined as a 2D or 3D image that is integrated into a larger scene." (Reed).

Wait, what? integrated into a larger scene? This may sound confusing. This is actually referring to an object which is drawn directly onto the screen in front of a background image while the game is running. For example, every time a player throws a stick at a dog rummaging through the garbage, there are actually four sprites displayed: the player, the stick, the dog, and the garbage can. They're all displayed as different sprites on top of the background.

All of us have seen a sprite in the real world. If you picture the wheel on a car you'll notice that it moves separately from the car itself. Also, the car moves independently from the scenery behind it. So, let's break it down into what is actually seen when car is driving by:

1. The wheel of the tire is spinning.
2. The car is moving (sometimes too fast in neighborhoods).
3. The scenery behind the car doesn't seem to move at all.

Each moving object seen could be represented by a sprite. You'll notice the scenery in the background

doesn't really move (unless a volcano is going off, but this would also be a sprite). Typically, if it is possible to describe something as a noun that can move, it can be a sprite. A wheel, a car, exhaust smoke, or the flock of birds flying passed overhead. These are all sprites.

I Understand What a Sprite Is, So What's a Sprite Sheet?

Ah, the key question which has fathomed many. It's actually quite simple. A sprite sheet is a collage of images representing a sprite's movement. Each image has a "frame" which displays how a sprite should look when moving. It's pretty much like a cartoon flip book, except the "frames" are all on the same page. The programmer frames each image out to only display the current image that should be shown.

Below, we have a simple sprite sheet of a water balloon being thrown.



fig. 2 Sprite sheet of a water balloon

You can imagine a rectangle around each balloon, which makes an animation when combined and repeated. Much like a flip book, it appears to the viewer that the image is actually moving. In actuality, the image is constantly being redrawn on the screen over and over again.

Now go out and share your new knowledge with the world. Your friends and family will be jealous when they hear how intelligent you sound talking in game development jargon.

References

The American Heritage Dictionary of the English Language, Fourth Edition (2009). New York, NY: Houghton Mifflin Company.

Reed, Aaron. (2011). *Learning XNA 4.0*. Sebastopol, CA: O'Reilly Media, Inc.

Software Engineering

Debugging

The word “debugging” can be described as removing errors from a program while being developed. This process is probably the most hated, yet most useful process when programming software. Similar approaches are used when mechanics diagnose a car. When there is a rattle in an engine, or a knocking sound when a car is turning, mechanics can eventually break down what the car should do versus what it is currently doing.

If a software system breaks down or has an error, a software engineer needs to go through the actual code to find out where that error occurred. They do have diagnostic tools similar to mechanics, but these tools do not always provide accurate information as to what is going on inside the code (see fig. 1).

```
Inner Exception: System.Exception: Problem converting string to integer ---> System.FormatException: Input string was not in a correct format.
   at System.Number.StringToNumber(String str, NumberStyles options, NumberBuffer& number, NumberFormatInfo info, Boolean parseDecimal)
   at System.Number.ParseInt32(String s, NumberStyles style, NumberFormatInfo info)
   at System.Convert.ToInt32(String value)
   at ExceptionPropertiesLab.Program.Method3() in C:\Users\Lenovo\Documents\Dropbox\Dropbox\School Spring 2012\CS 2530\ExceptionPropertiesLab\ExceptionPropertiesLab\Program.cs:line 48
--- End of inner exception stack trace ---
   at ExceptionPropertiesLab.Program.Method3() in C:\Users\Lenovo\Documents\Dropbox\Dropbox\School Spring 2012\CS 2530\ExceptionPropertiesLab\ExceptionPropertiesLab\Program.cs:line 53
   at ExceptionPropertiesLab.Program.Method2() in C:\Users\Lenovo\Documents\Dropbox\Dropbox\School Spring 2012\CS 2530\ExceptionPropertiesLab\ExceptionPropertiesLab\Program.cs:line 40
   at ExceptionPropertiesLab.Program.Method1() in C:\Users\Lenovo\Documents\Dropbox\Dropbox\School Spring 2012\CS 2530\ExceptionPropertiesLab\ExceptionPropertiesLab\Program.cs:line 29
```

fig. 1 Example of a program's error.

As shown in fig. 1, it can be quite confusing searching for the possible error that has occurred. Even with existing tools, only a brief description is provided.

If you review the first line in the figure, a statement reads, “Problem converting string to integer.” This occurs when a program tries to use a word, sentence, or an entire document as a number. You also may notice at the end of each sub-paragraph, there reads “line” followed by a number. This represents where the error possibly occurred within the code. Using current diagnostic tools, they are able to at least identify where the error possibly occurred. After reviewing the possible issues, they make changes accordingly.

The Program Told Me 2x8 Was 26?

This is the issue programmers despise. It's described as a “logical error”. I'm sure computer users see it more than they would like to. This issue doesn't “crash” a program, it simply displays an undesired output.

In order to locate the logical error, software engineers use “breakpoints” and “steps” to locate the issue. A breakpoint is similar to a stop sign. It asks the program to stop at a specified point in the program until told to move on. After the stop is reached, a programmer may “step” through a program, allowing it to resume as normal while stopping after it moves again. This would be similar to a car taking a turn after a stop sign. After finishing the turn, the car would stop again, making it available to review the car once again.

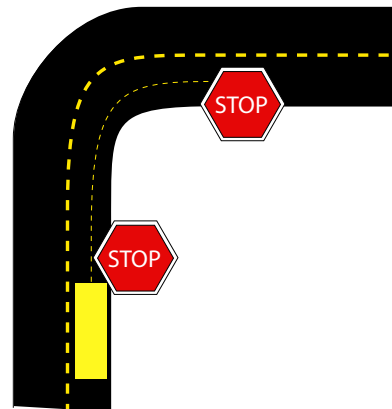


fig. 2 Breakpoints and steps allows a programmer to diagnose issues at each stage..

Using debugging processes, software is able to be released with minimal issues when applied correctly. Although, as you could imagine, sometimes a car needs to be “taken back to the shop.”

Video Games

The Beneficial View

There are many claims and reported studies which declare video games are degenerating society by increasing aggression, removing social bonds, decreasing memory performance and creating individual instability. However, these claims are far from complete due to lack of information. Newer studies suggest video games increase mental tasks, visual attention, individual stability, social bonds, scientific production, and may actually decrease social aggression.

Video game studies are far from complete due to the recent advancement in technology. In 1965, Gordon Moore from Intel suggested the possibility of processing circuits doubling in size every two years. On January 4, 2000, Intel introduced a 533 MHz processor to the market. Fast-forward eight years, Intel released a 3.2 GHz multi-core processor embedded with four processors. Along with this advance in technology, consumers are gaining access to the world-wide

web in alarming numbers, allowing people to collaborate from all over the world.

With this in mind, video game studies should be regarded as changing as well. Therefore, more recent studies should be considered before disregarding the benefits of video games. A study provided by the Entertainment

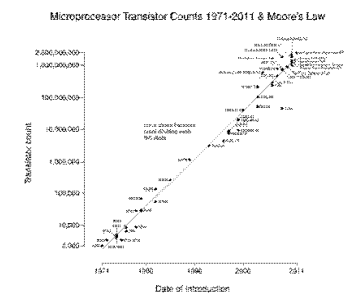


Fig. 1 Advances of the Microprocessor.

Software Association states: “Sixty-eight percent of parents believe that game play provides mental stimulation or education, 57 percent believe games encourage their family to spend to time together, and 54 percent believe that game play helps their children connect with their friends” (“The 2011 Essential Facts”).

Many video games challenge the player’s abilities to perform mental tasks through puzzles and environment manipulation. These puzzles also require intense visual attention in order to complete certain tasks for advancement throughout the game. As stated in one research volume “Simulation & Gaming”, “The ability to mentally rotate or arrange objects is related to many general learning tests and paradigms, and research has shown that video game play is related to this ability” (Barlett et al., 389). Puzzles and manipulative tasks provided by video games increase creative and logical intuition. This requires the use of both sides of the human brain.

While video games challenge our mental performance, the player also feels more satisfied individually with intrinsic rewards generated by the sense of satisfaction for completing difficult tasks. Inside Reality Is Broken, Jane McGonigal covers this idea writing, “Games make us happy because they are hard work that we choose for ourselves, and it turns out that almost nothing makes us happier than good, hard work” (57). Also, McGonigal suggests the average gamer is the typical working class whose “smarts and talents” are underutilized throughout the day. The chance to “plan and coordinate complex raids and quests” relieves stress and completes a more satisfying life for the individual working forty hours per week (57-61). In other words, while systematically relieving stress of everyday life, video games increase happiness inside one to make a better way of living.

Not only do video games promote individual stability through the satisfaction of intrinsic rewards, they may actually lessen aggression. For years, critics have constantly battled for the removal of violence in video games claiming the actions introduced increase aggression in a societal community by desensitizing individuals. However, for millions of years aggression has been found among every animal in respect for survival including humans. In Civilization and Its Discontents, Sigmund Freud discusses the natural tendency towards aggression amongst humans. In this work, he looks at the almost impossible removal of aggression throughout society by redirecting or sublimating an individual’s natural aggression into a socially acceptable environment (19-23). While aggression towards others may always be among an individual it may be possible to limit aggression using video games.

Included in social acceptance of individuals, social collaboration amongst others is also invited. Cooperation amongst players is by no means new to video games, innovations in technology over the past several years make it possible for players to perform in large groups. In order to successfully complete various tasks cooperation is required between players. The largest amongst these games include Blizzard’s World of Warcraft where groups are compiled to finish various tasks which would not be possible to accomplish with an individual alone. In his paper, Ducheneaut writes “Indeed, there is no evidence from WoW that players feel their social experience is impoverished—it is in fact quite the opposite” (100). Video games are now inviting teamwork as a necessity, which creates social bonds among the community.

With possibilities of large-scaled group interaction due

to technological advances, it is now possible to collaborate across the globe. When carrying group interactions into a scientific community, amazing accomplishments can be achieved. For instance, a research scientist from the University of Washington started an online game which he called FoldIt. This game allows players to manipulate damaged protein diagrams in order to fix them. Players have the ability to work together by various means in order to accomplish this task. The social environment is described as a way players can collaborate with their group members by helping each other with strategies and tips through the game's chat function or across the wiki (Cooper et al. 759). This simple protein puzzle game has created some significant strides in understanding protein structures. Players working collectively managed to help identify a protein structure necessary for the reproduction of the HIV virus within three weeks. This is an astonishing feat for scientists trying to understand the HIV virus.

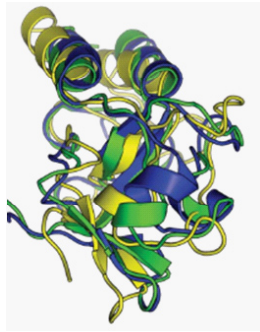


Fig. 2 The top-scoring computer model was unable to sample as close to the native protein as the Foldit players (Cooper 758).

Video games have only been part of society for a minute timeline compared to the entire human civilization. Unfortunately, there is very little research displaying the effects of video games on society. Also, since technology is advancing at such a rapid rate, it is almost impossible to predict where video game advancements and understanding will be in the next few years. This has brought a large amount of critics foreseeing video games as interfering with the average daily devotion of and individual among a societal community because they simply don't understand the possibilities brought about by the gaming industry. Recent studies suggest the future of gaming can provide a positive impact among society as a whole.

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```
public void printCareerObjective()
```

```
{
```

```
    "To develop reusable and powerful game engines to be used inside the latest video games."
```

```
}
```

```
public void printSkills(list<Skill> skills)
```

```
{
```

- C++ Programming
- Borland Delphi
- Adobe Indesign
- Types over 50 Corrected WPM
- C# Programming
- Adobe Photoshop
- Adobe Illustrator
- Java Programming
- Adobe Acrobat Pro
- Microsoft Office

```
}
```

```
public void printEducation(list<School> schools)
```

```
{
```

- Salt Lake Community College
Computer Science (Graduating May 2012)
- 3.58 GPA
 - Advanced Computer Studies
 - Philosophical Studies
 - Advanced Mathematical Studies
 - General Business/Marketing Studies

Hillcrest High School

General Education

- 3.2 GPA
- Computer Studies through Jordan Technical Center
- AP World History
- AP Computer Science

```
}
```

```
public void printWorkHistory(list<Career> careers)
```

```
{
```

FedEx Office (2004-2010)
Assistant Manager

- Inventory
- Ordering
- Scheduling
- Training
- Team Member Relations

Kinko's (1996-2003)

Project Manager

- Vendor Negotiations
- Client Consulting
- Management Consulting
- Account Management

```
}
```

```
public void printSpecialRecommendations(list<string> recommendations)
```

```
{
```

- Volunteers at No More Homeless Pets
- Enjoys Learning New Experiences
- Dependable
- Enjoys Learning New Experiences
- Understanding of People's Expectations

```
}
```

```
list<Reference> = availableOnRequest;
```