

# Casual gaming

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## Abstract

Casual games have started to get a large player base in the last decade. In this paper we are going to have a basic look at the technology involved in creating casual games, common game mechanics, and the influence of social media on casual games.

## 1 Introduction

In this paper we are going to look at how casual games are being created. This will include useful tools, and commonly used programming languages. The main part of this paper will look at some game mechanics which are at the core of casual games. We will pick out some popular games and look at which mechanics are crucial to a successful gameplay. We will also look at the influence of how social media introduced more people to casual games.

### 1.1 What are casual games

Casual games are video games developed for the mass consumer, even those who would not normally regard themselves as a gamer. Casual games are quick to access, easy to learn, and require no previous special video game skills, expertise, or regular time commitment to play. This makes it perfect to fit in the busy life of adults which have little time to play.

Common elements in the design of casual games include [TRE10]:

- Rules and goals must be clear.
- Players need to be able to quickly reach proficiency.
- Casual gameplay adapts to a players life and schedule.
- Game concepts borrow familiar content and themes from life.

### 1.2 History

The start of casual gaming began in 1990 when Microsoft started bundling Windows Solitaire with Windows. Many people were still getting used to the idea of using a mouse to navigate through a graphical user interface. Microsoft used Windows Solitaire to train people to use the mouse and to soothe people intimidated by the operating system. [LEV08] The reason why Windows Solitaire is successful is because it is accessible, you do not have to install anything, because it comes with your operating system. It is also simple to use, it starts up almost instantaneously, the learning curve is a matter of seconds, and it removed the time-consuming part of card based games: the shuffling.

In 2000, Bejeweled was created by PopCap. The game had the Internet to make the game accessible to a large audience. Many people were still getting used to the idea of buying goods on-

line, especially intangible things like downloadable games. Similar to how Windows Solitaire eased PC users into the idea of the mouse, Bejeweled helped ease people into the idea of online purchases.

In 2006, the console Wii bundled with the game Wii Sports put the next step in casual gaming. Following the rule of easy to learn, and having a theme similar from life, Wii sports was a hit. The next step in casual gaming was not necessarily made by the game itself, but by the interface made possible by the Wiimote. The Wiimote allowed players to use swing like motions to access the game, which is more intuitive.

## 2 Platforms and technology

Casual games exist on many different platforms. There are also many programming languages used for creating games, for most programmers this is too much to keep up with. Luckily as a designer there are multiple tools available that include features like multiplatform publishing to make your life easier.

### 2.1 Flash

Most of the casual games playable online in your browser require the installation of Adobe Flash Player. These games are created in Actionscript. Actionscript is an object-oriented language, it has the same syntax and semantics as JavaScript, and is used primarily for the development of websites and software targeting the Adobe Flash Player platform. On Web pages it is used in the form of embedded SWF files, which enables flashy animations and playing videos.

### 2.2 HTML 5

A new alternative to Flash for making web games is HTML5. The HTML5 specification introduces

a group of new features and technologies for making games, such as WebSockets, the canvas element, offline storage, WebGL, and Audio. In its most basic form, an HTML5 game consists of using JavaScript with the new canvas element to render objects. The GPU powered HTML5 canvas allows full 3D experiences. WebSockets allow multiplayer capability in games, and offline storage for the ability to play even when not connected to the Internet. Because HTML5 does not require any plug-ins to be installed, it lends itself perfectly for the casual audience, providing great accessibility. [ABO10]

### 2.3 Android

Games for the Android platform are Java based. To be able to start creating games for the Android platform, you will need the Java Development Kit, the Java Runtime Environment, and the Android SDK. The Android SDK includes an Android Emulator, a virtual mobile device that runs on your computer. The Android emulator mimics the hardware and software features of a typical mobile device, to allow modeling and testing applications more easily. With the existence of many devices that run the Android operating system, the Android Virtual Device (AVD) was created. AVDs let you specify the Android device that you want to run in the emulator. [AND11]



Figure 1: Emulator for the android platform

## 2.4 Iphone

Developing for the Iphone platform it is required to develop on an Intel-based Mac running at least Mac OS X Leopard. Like developing for the Android platform, you will be needing a Software Development Kit. Apples Iphone Software Development Kit includes tools like XCode, an interface builder, and also an Iphone simulator. The XCode work area has several unique user interface elements, like dragging elements and generating code, that makes it easy to work on many different tasks, even multiple projects, without cluttering your work area. [IOS11]

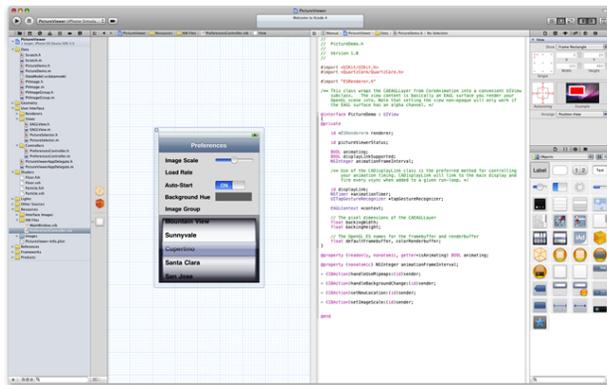


Figure 2: XCode integrated development environment

## 2.5 Multiplatform

A tool for developing games for multiple platforms is Unity. It currently supports publishing games for the Web, iOS, Android, Windows, Mac and the Wii. Unity supports game designers to focus on creating the game, by relieving the designer of some secondary tasks. For example Unity supports integration with graphics tools like 3ds max, Maya and Blender, this enables the designer to save time when an asset modified and saved, because Unity will automatically pick up all changes across your entire project. To fulfill different needs of different hardware, a Direct3D and OpenGL renderer is available, and there is

also built-in support for Nvidias PhysX physics engine, so there is no need for creating a game engine from scratch. Unity also includes versatile tools like a tree creator, and a world builder. For scripting in Unity you will require knowledge of either JavaScript, C# or Boo, this way, you do not have to switch between programming languages if you create a game for another platform, or if you port your existing game to another platform. For implementing online high scores, multiplayer or anything involving networking Unity uses RakNet. RakNet is a C++ class library that provides TCP and reliable UDP transport. [UNI11]

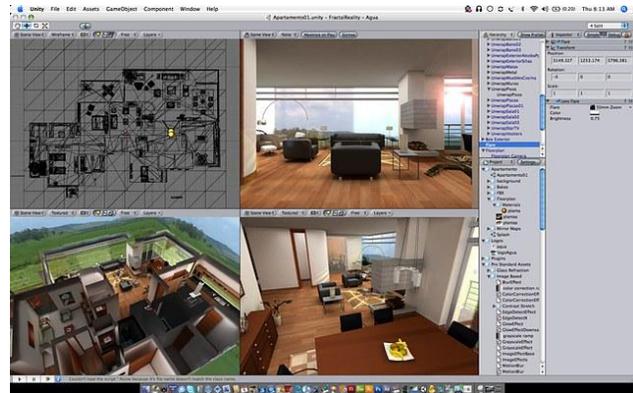


Figure 3: Unity

## 3 Social games

With the arrival of social networks like Facebook, some casual games have evolved into social games. Social games are in its core still casual games. I distinguish two types of social games, the first being casual games which added social network integration, for example games that allow sharing high scores on Facebook. The second type are social networks which added casual game support, these are the games you can find on your social network site like Farmville.

Facebook is one of the many social network services that focuses on building and reflecting social relations among people. A social network

service essentially consists of a representation of each user, his or her social links. The reason why casual games started to evolve into social casual games are because of the large user base of the social network sites. For example, Facebook has more than 500 million active users, while 50

Users of social network sites usually think they will be spending just a couple of minutes on the website. They stumble upon something interesting and after a while they have noticed that they have spent more than the couple of minutes on the website. A same impulsive pattern can be seen with casual gamers. They just stumble upon a game which looks fun, they try the game, and get lost in time. That is why casual games on social network sites work so good together. [TRE10]

## 4 Development

Developing a casual game requires a small group of people to work together. A video game development team can generally be broken down in game designers, artists, programmers, level designers, sound engineers, and testers. [BAT04] In general when there are less people available, the development team is composed of people who can take multiple roles.

### 4.1 Roles

#### 4.1.1 Game designer

A game designer is a person who designs gameplay, creating the rules and the structure of a game. Development teams usually have a lead designer who coordinates the work of other designers. The game designer is the main visionary of the game. In the course of developing the game, often the game designer fulfills another role like writing the story or creating art.

#### 4.1.2 Artist

A game artist is a visual artist who creates video game art. Depending on whether the artist is capable in 2D art or 3D art, the artist produces different works. A 2D oriented artist may produce concept art, sprites, textures, environmental backdrops or terrain images, user interface. A 3D artist usually produces models or meshes, animation, 3D environment, and cinematics.

#### 4.1.3 Programmer

The games codebase development is handled by programmers. The programmers basically write the code that brings the game alive. This is the heavy lifting that is done in video game development. Even in casual game development where the teams aren't big, there are usually multiple programmers.

#### 4.1.4 Level designer

A level designer is the one who creates the levels, challenges or missions for the game using a specific set of programs. These programs may be available commercial or are provided by the game programmers. Level designers often work with placeholders and prototypes to provide a clear layout before the required artwork is completed.

#### 4.1.5 Sound engineer

Sound engineers are responsible for sound effects and music in the game.

#### 4.1.6 Tester

A game tester analyzes video games to document software defects as part of quality control. Testing is technical field requiring computing expertise and analytic competence.

## 5 Game mechanics

Each game is comprised of a series of game mechanics. These mechanics, from creating matches of three items in a game like Bejeweled to sequencing numbers in a game of Sudoku, dictate what players do when they play a game. At the heart of any great game is an elegant core mechanic that is both firm enough to provide clear gameplay yet flexible enough to allow players to develop strategies. In this chapter we will look at some core game mechanics that are often used.

### 5.1 Matching

This mechanic comes in a number of different ways, but it is always matching patterns. This ranges from colors to symbols to pictures.

### 5.2 Sorting

Sorting comes in a number of different ways. From sorting abstract symbols only relevant to the game, to numbers and letters. Some games even push the use of contextual knowledge to sort clothes into different style categories. Sorting makes for a natural casual gameplay because it does not require the player to develop a new skill. Every day you read, parse and act upon information. Actually you do this in every game, but sorting games make this process explicit.

### 5.3 Seeking

Seeking comes in the form of finding hidden objects in a game area. In its simplest form the game provides a picture with hidden objects in it, while providing the player with a list of objects the player needs to find. This mechanic relates to finding Easter eggs and scavenger hunts.

### 5.4 Managing

The managing mechanic comes in a couple of ways, from time management to resource management. Games including this mechanic requires players to keep track of multiple elements while trying to keep everything on track.

### 5.5 Hitting

Hitting is the process of reaching out and coming into contact with another object. This mechanic takes many forms, you can hit objects with your hand, with a stick, with a racquet, with your foot etc This mechanic often is found in sport games like in baseball, boxing, or golf.

### 5.6 Chaining

Chaining is a specific chain of actions that can be done in a game. Chaining is a way to shape player actions. It is a way for a game designer to give another option to do something in a game even if another element of the game tells the player otherwise.

### 5.7 Constructing

Construction mechanics allow players to be creative. Especially in sandbox games where players can freely experiment. Construction-based games often allow multiple options to achieve a goal, this can sometimes feel unstructured.

### 5.8 Physics

Physics-based games rest on the simulations of the basic laws of physics, emulating things like gravity, friction and force. The laws of physics become rules that impact elements in the game and impact your moves. Players already have experience with the physical laws of nature, this makes it easier to pick up the basic concept of

the game. Even though we understand the basic laws of physics does not mean we can predict how everything will go exactly, this translates to games in which players experiment.

## 5.9 Sharing

When players get a high score in a game, they often get the option to share it with other players or friends. Sharing is also seen in social games. For example in Farmville you are able to share rare items with 5 friends on Facebook.

## 5.10 Leveling

The leveling mechanic is found in games to give the players a sense of progress. Often a level is related to unlocking different game content.

## 5.11 Multiplayer

Multiplayer games allow more players enjoy the gaming experience together, whether it be turn based like in a board game, or real time. Some casual games like Solitaire have even added multiplayer, in the form of MSN Solitaire Confrontation.

# 6 Comparing games

In this section we are going to look at how the game mechanisms are used in some of the popular social and casual games. For reference, I have put the results in Figure 4.

## 6.1 Angry Birds

In this game you launch different kind of birds in a construction of different materials like wood, ice and metal which surround pigs. The goal is to crash into the game level and make things hit the pigs so they vanish, after all the pigs are gone the level is cleared. Its clear that in this game it is all about the hitting mechanic and also about physics. The simulation of force, gravity and friction is all simulated in the game level and is clearly visible when you look at birds. When you clear a level, you can share your score on different platforms like on their own social gaming platform Crystal. [ANG10]

Compare Table	Matching	Sorting	Seeking	Managing	Hitting	Chaining	Constructing	Physics	Sharing	Leveling	Multiplayer
Angry Birds					x			x	x		
Doodle Jump					x			x	x		
Bejeweled Blitz	x					x			x	x	
Robot Unicorn Attack					x	x		x	x		
Zuma's Revenge	x				x	x					
Diner Dash	x			x		x					
Farmville				x			x		x	x	x
World of Goo							x	x			
Photoplay: Find it!			x			x					x
Mystery Case Files: Dire Grove			x								
Imagine: Fashion Designer New York		x									
Flight Control				x							
Cooking Mama	x			x	x		x				
Tetris				x		x	x				x
Line Rider							x	x	x		

Figure 4: Compare table of the results

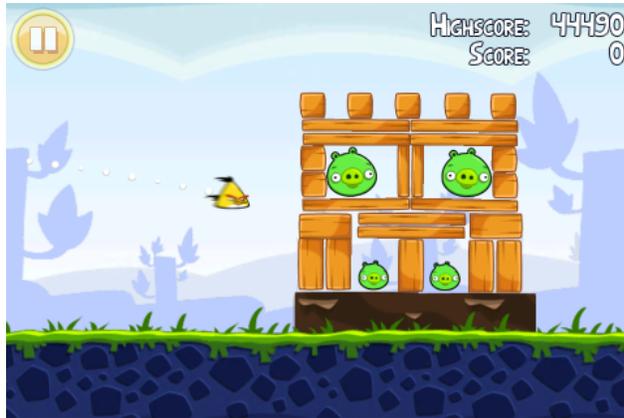


Figure 5: Angry Birds

## 6.2 Doodle Jump

In this game you try to jump as high as you can by jumping on platforms and picking up some items which can help you get higher easier. When tapping on the screen, you can fire bullets which takes care of the different monsters that are hindering your advance towards the top. This shows the hitting mechanic. I can also make out the physics mechanic, because you are constantly jumping, and again, being able to share your score shows the sharing mechanic. [DOO10]

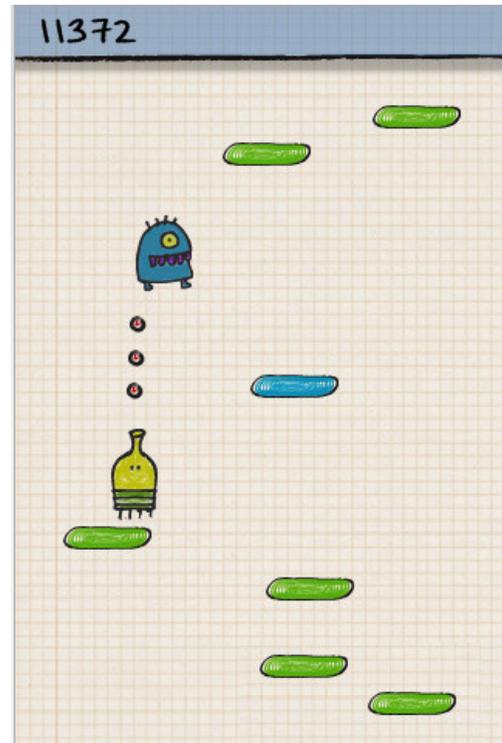


Figure 6: Doodle Jump

## 6.3 Bejeweled Blitz

While in Bejeweled Blitz you also have the same matching mechanic as in Bejeweled, there are differences. The main difference in this game with the basic bejeweled is, you only have one minute to match your gems. There is also a subtle leveling mechanic found after you finished your one minute game. Depending on what score you achieved, you will be given a medal appropriate for you score, the more medals you have for a category, the higher your level will be in that score category. There is also a bit of chaining that can be done for the more advanced players, it is possible to align some of the gems to create better gems like the flaming gem, hypercube, and the game also rewards making huge cascades



Figure 7: Bejeweled Blitz

## 6.4 Robot Unicorn Attack

In this game you play as a robot unicorn that keeps on running forward. You have to jump over gaps and dash through stars to try getting as far forward as you can. You can also share your score. You can try getting a higher score by hitting every star you come across, making a large chain. [ROB11]



Figure 8: Robot Unicorn Attack

## 6.5 Zuma's Revenge

In this game you try to create matches by placing at least three like-colored balls into contact. To place colored balls in to the chain of balls, you have to shoot it from a frog. By making matches with consecutive shots without missing a match will get you a chain. [ZUM11]



Figure 9: Zuma's Revenge

mechanic, the game rewards you for doing several actions consecutively, for example instead of taking an order, carrying out the order, you try to collect as many orders at the same time before carrying them out. [DIN03]



Figure 10: Diner Dash

## 6.6 Diner Dash

In this game you are going to a process of serving every customer that comes in your restaurant. There is also a matching mechanic going on, because you have to match the food with the order of the customer. To be able to keep all the customers happy, you will have to manage your time well. In the game there is also a chaining

## 6.7 Farmville

In Farmville there is a managing mechanic, this can be found in how players need to manage their Farmville gold, buildings, crops and animals. A leveling mechanic is found, where with each level up you unlock items and a new title. Construction mechanic is found in the way you can customize the looks of your farm through different

items, crops, buildings, animals, and decorations. You can also share lots of items, gifts, calves with friends on Facebook. There is even multiplayer for players who want to join up for some Co-op farming or Co-op jobs, where players join up to complete challenges together. [FAR11]



Figure 11: Farmville

### 6.8 World of Goo

In this game you try to help getting goo balls in to a pipe. Each level has a requires the player to help at least a specific number of goo balls to get to the pipe. To help goo balls to their destination, you can use goo balls to create constructions like bridges to help get to the pipe. While constructing you also have to consider the simulated gravity. [WOR08]

### 6.9 Photoplay: Find it!

In this game you try to find differences between two similar looking images. It also features a chaining mechanic, it rewards you for consecutively pointing out differences in images instead



Figure 12: World of Goo

of just randomly pointing out places in the game screen. Although not explicitly stated in the game, the game is perfect for multiple players playing at the same time on one device. [PHO10]

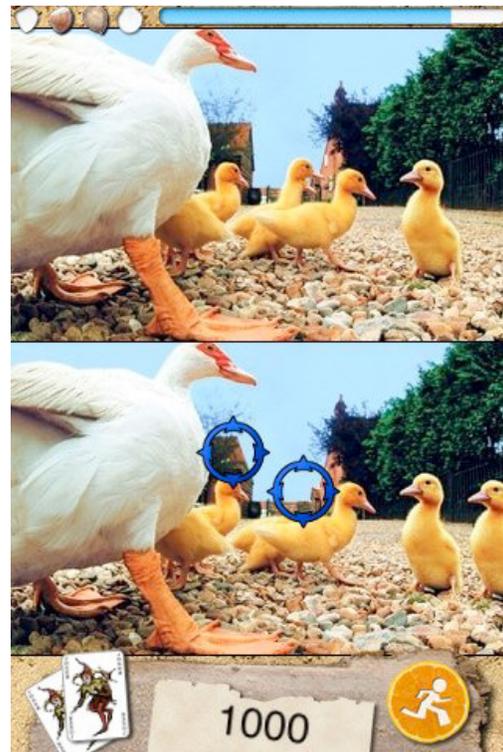


Figure 13: Photoplay: Find it!

## 6.10 Mystery Case Files: Dire Grove

In this game, there are some small puzzles you need to solve to move on, though the core gameplay is seeking objects in several game areas that are on a list. [MYS09]



Figure 14: Mystery Case Files: Dire Grove

## 6.11 Imagine: Fashion Designer New York

In this web game, the player is a fashion designer which has to prepare models for the cat walk. Each model is given a style in which they need to be dressed. For example if one of the models have to wear casual clothes then it is up to the player to sort the clothes on style and pick the appropriate clothes and accessories. [IMA10]



Figure 15: Imagine: Fashion Designer New York

## 6.12 Flight Control

In this game you try to direct helicopters, small airplanes, and big airplanes to a landing platform without them crashing into each other. To be successful in this game the players will have to properly manage their attention to each airplane and helicopter. [FLI09]



Figure 16: Flight Control

## 6.13 Cooking Mama

In this game you try to make different kinds of food following certain recipes. This is done by playing some mini games. One of the mini games involves matching ingredients to put in a bowl. Some require you to manage time, fire, and ingredients while cooking. Some of the dishes also require you to arrange the food on the plate, which has a bit of construction mechanic in it. [COO06]

## 6.14 Tetris DS

In this game you try to manage the blocks that fall from the top of the screen and place them in lanes at the bottom. The game has built in a chaining mechanism which gives players more points for clearing more than one line at the same time. There is a clear construction mechanic going on in this game, as you are trying to create



Figure 17: Cooking Mama

a structure of blocks. Tetris DS also includes a multiplayer mode in which you can challenge a friend to a game of Tetris by wirelessly linking up with another Nintendo DS. [TET06]



Figure 18: Tetris DS

## 6.15 Line Rider

In this game you have tools to create a track with drawn lines. If you play the track, there will be a small rider which will ride your track purely based on simulated physics. There is also a possibility to share your tracks with other players. [LIN06]

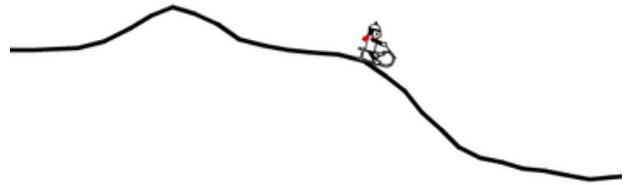


Figure 19: Line Rider

## 7 Conclusions

Casual games are created for the mass consumer even for those who do not normally see themselves as a gamer. Typical elements in casual games are that the rules and goals are clear, the game requires a small time commitment, the game can be played in a small burst and game concepts are often borrowed from familiar content and themes from life.

Because of the popularity of social media, social games have started to be integrated a sharing mechanic to the form of being able to easily share your high scores. It strikes me that while the mechanic itself can be removed, it is basically still the same game.

## 8 Future research

Social games are slowly transforming everyone into gamers, this could lead to the casual games wanting more complicated game mechanics. Could the hardcore games of today be the casual game from tomorrow?

Also with new inventions like touch screens, motion controlled controllers, or even removing the controller in its whole like with the Kinect, casual games are being more accessible to a large audience more than ever. Future research could delve into the effect of multiplatform casual games and their difference in success caused by different interfaces.

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