CS440 Final Project Report

Danh's Video Game Database

Team:

JayJay M.D.

Team Members:

Jonathan Rohr
Joshua Bell
Meagan Olsen
Danh Nguyen

Problem

With an ever increasing amount of information on the web these days, it has become harder and harder for users to locate specific information about a video game that they want. Things such as reviews, blog post, or articles are varying too widely in format, scaling, and data type. Currently, there are not many databases or websites out there that consolidates video games from different consoles, developers, or ratings into one relative location. Sites like GameSpot, OpenCritic, and GameRankings all have their own ratings for the same games, but there is no one place to view them. Therefore, we want to construct a database that can combine data and information from many different sources into one. Our plan is to migrate the data from sources such as GameSpot, OpenCritic, and GameRanking into our database, and make it easily accessible to the user in one relative location. With multiple types of data available from one location, the user will easily be able to compare the different types of data such as ratings and be able to make a considerate opinion on how good a game is.

Solution

Our solution is to create a searchable MySQL Database Application containing millions of tuples of information regarding hundreds of thousands of games. This large database can be used to help avid video gamers find the information that they desire about their favorite video games in one place efficiently. Each tuple in our database will have various attributes including: name of the game, publisher, developer, release date, age-rating, rating, site giving that rating, genre, and what console it can be played on. This information was collected from a variety of sources around the web and combined into a database. We then take the data from this database and create a website that presents the data to users in an easy-to-use format. User will be able to view all the games in the database and see the different attributes of each game described above. The site will also provide search functionality that allows users to find games based on title or any of the other attributes. This website will accomplish the goal of displaying data on video games from all around the web in a single website that’s easy to read and navigate.

Data Collection

We wanted to use OpenCritic, GameRankings, and GameSpot to gather our data to be stored in our database. To start, we used a web scraping tool called ParseHub to help us out. ParseHub is designed to sequentially load pages on a site and grab elements from each page. In our case, we wrote a routine that scraped the all game names, platforms, and ratings from the OpenCritic and GameRankings websites. These values were stored in a CSV file. We imported the OpenCritic and GameRankings datasets into our phpMyAdmin server.

Next we used the freely provided GameSpot API to gather the remainder of our data from the GameSpot website. The API allowed us to make get requests using specific urls to receive an xml file with a limited amount of information (100 pages worth per call due to the APIs limitations). The amount of pages of data was in the hundreds of thousands range, so we needed to make a large number of calls incrementally. For example, if there was 1000 total pages and each call would only give us 100 pages, we would have to increment the offset value in each call 10 times. This is because the offset value is a way of telling the API what page to start gathering data. The first call has the first page as offset = 0 and it gives 100 pages of results. The next call we would need to make would have the offset value set at 100 because that would give us results from page 101 to page 200. We used a tool called Postman to incrementally send get requests for various API calls. After every call it would add 100 to the offset value which would tell the api to get the next 100 pages from the GameSpot database. The first set of data we wanted to gather was the collection of game ratings. The second set of data we wanted from GameSpot was all basic information about every video game release that they had (release date, genre, publisher, etc.).

The results from the thousands of API calls were stored in thousands of XML files by some code attached to Postman. We then merged all of the XML files for the ratings dataset and all of the XML files for the general information dataset separately using some custom commands in a terminal. We converted the XML files to CSV files and proceeded to parse through and organize the data by hand in Excel. For instance, given our general information dataset, we had to seperate the publisher, genre, developer, and release information and place them in their own CSV files so that they could be uploaded into their appropriate tables. Finally, each CSV file from the extensive GameSpot dataset (now organized) was imported into their appropriate tables in our phpMyAdmin database. At this point we needed to display our data, so we started work on a web app.

Implementation

The back end of the web application was developed with Node.JS and the Express framework. The front end was developed using HTML, Handlebars, and CSS. The database was managed using phpMyAdmin. We created a JavaScript file that functioned as the server and separate JavaScript files for each web page on the site. The JavaScript included SQL calls to the database which returned the appropriate data for the web pages depending on the searches being performed. This data was then passed to the appropriate handlebars template to be displayed on the website. The appropriate JavaScript functions for each type of search are called based on the URL route created when the user performs a search.

Results

The web interface gives users the ability to view hundreds of thousands of games in one place. The games page displays the titles of all the games in the database and provides users with a search bar that returns games whose titles include the search term.

The release page displays all the games along with their appropriate release date, region, platform, and age rating. The search bar on this page provides the ability to search on different attributes depending on what the user selects in the dropdown menu.

Title	Release Date	Region	Platform	Age Rating
! That Bastard Is Trying To Steal Our Gold !	May 11, 2014	North America	PC	
! That Bastard Is Trying To Steal Our Gold !	May 11, 2014	North America	Linux	
! That Bastard Is Trying To Steal Our Gold !	March 3, 2016	North America	PC	
! That Bastard Is Trying To Steal Our Gold !	March 3, 2016	North America	Linux	
!4RC4N01D!	January 12, 2018	North America	PC	
!4RC4N01D! 2: Retro Edition	February 6, 2018	North America	PC	
!4RC4N01D! 3: Cold Space	March 8, 2018	North America	PC	
!4RC4N01D! 4: KOHBEEP edition	March 30, 2018	North America	PC	
!Anyway!	June 6, 2018	North America	PC	
!BurnToDie!	September 27, 2018	North America	PC	
!Card++	January 8, 2012	North America	iOS (iPhone/iPad)	
!Dead Pixels Adventure!	June 12, 2018	North America	PC	
!LABrpgUP!	June 13, 2018	North America	PC	
!nsane	March 30, 2016	North America	PC	
!nsane	May 2, 2016	North America	Macintosh	
!Peace Phantom2!	March 13, 2018	North America	PC	
!Que Pasa Neng!	December 11, 2006	Europe	PlayStation 2	PEGI: 7+
!Rebolt!	December 12, 2008	North America	iOS (iPhone/iPad)	
!Shin Chan: Flipa en colores!	November 16, 2007	Europe	DS	PEGI: 7+
!Snooker!	April 5, 2012	North America	iOS (iPhone/iPad)	
!The Claw!	December 17, 2011	North America	iOS (iPhone/iPad)	
"Aha! I Found It!" Hidden Object Game	January 25, 2010	North America	Wii	ESRB: E
"Aha! I Found It!" Hidden Object Game	February 5, 2010	Europe	Wii	PEGI: 3+
"Aha! I Got It!" Escape Game	October 2, 2009	Europe	Wii	PEGI: 3+
"Aha! I Got It!" Escape Game	November 2, 2009	North America	Wii	ESRB: E
"Glow Ball" - The billiard puzzle game	February 16, 2014	North America	PC	

The ratings page displays the games, the platform, the rating, and the website that the rating came from. Many games have ratings from multiple websites. Those games have an entry for every rating from the different websites. The search bar on this page provides the ability to search on different attributes depending on what the user selects in the dropdown menu.

Title	Website	Platform	Rating
#IDARB	GameSpot	Xbox One	80
#IDARB	OpenCritic	N/A	78
#IDARB	GameRankings	XONE	79
#killallzombies	OpenCritic	N/A	63
#KILLALLZOMBIES	GameRankings	PS4	63
#KILLALLZOMBIES	GameRankings	XONE	54
'Splosion Man	GameSpot	Xbox 360	80
'Splosion Man	GameRankings	X360	86
.detuned	GameRankings	PS3	40
.hack//G.U. Last Recode	OpenCritic	N/A	76
.hack//G.U. Last Recode	GameRankings	PC	71
.hack//G.U. Last Recode	GameRankings	PS4	77
.hack//G.U. vol. 1//Rebirth	GameSpot	PlayStation 2	63
.hack//G.U. vol. 1//Rebirth	GameSpot	PlayStation 2	63
.hack//G.U. vol. 1//Rebirth	GameRankings	PS2	73
.hack//G.U. vol. 1//Rebirth (Special Edition)	GameSpot	PlayStation 2	63
.hack//G.U. vol. 2//Reminisce	GameSpot	PlayStation 2	57
.hack//G.U. vol. 2//Reminisce	GameSpot	PlayStation 2	57
.hack//G.U. vol. 2//Reminisce	GameRankings	PS2	65
.hack//G.U. vol. 3//Redemption	GameSpot	N/A	50
.hack//G.U. vol. 3//Redemption	GameRankings	PS2	67
.hack//Infection Part 1	GameSpot	PlayStation 2	70
.hack//Infection Part 1	GameSpot	PlayStation 2	70
.hack//Infection Part 1	GameRankings	PS2	77
.hack//Mutation Part 2	GameSpot	PlayStation 2	67
.hack//Mutation Part 2	GameSpot	PlayStation 2	67
.hack//Mutation Part 2	GameRankings	PS2	74
.hack//Outbreak Part 3	GameSpot	PlayStation 2	64
.hack//Outbreak Part 3	GameSpot	PlayStation 2	64
.hack//Outbreak Part 3	GameRankings	PS2	69
.hack//Quarantine Part 4	GameSpot	PlayStation 2	61
.hack//Quarantine Part 4	GameSpot	PlayStation 2	61
.hack//Quarantine Part 4	GameRankings	PS2	68
0 Day Attack on Earth	GameSpot	Xbox 360	40

The genres page displays the games and their appropriate genres. The search bar on this page provides the ability to search on different attributes depending on what the user selects in the dropdown menu.

Title	Genre
! That Bastard Is Trying To Steal Our Gold !	Puzzle
!4RC4NO1D!	Action
!4RC4NO1D!	Arcade
!4RC4NO1D! 2: Retro Edition	Action
!4RC4NO1D! 2: Retro Edition	Arcade
!4RC4NO1D! 3: Cold Space	Action
!4RC4NO1D! 3: Cold Space	Arcade
!4RC4NO1D! 4: KOHBEEP edition	Action
!4RC4NO1D! 4: KOHBEEP edition	Arcade
!Anyway!	2D
!Anyway!	Action
!Anyway!	Platformer
!BurnToDie!	2D
!BurnToDie!	Action
!BurnToDie!	Platformer
!Card++	Trivia/Board Game
!Dead Pixels Adventure!	2D
!Dead Pixels Adventure!	Action
!Dead Pixels Adventure!	Platformer
!LABrpgUP!	Role-Playing
!nsane	Puzzle
!Peace Phantom2!	2D
!Peace Phantom2!	Action
!Peace Phantom2!	Platformer
!Que Pasa Neng!	Miscellaneous
!Rebolt!	Action
!Shin Chan: Flipa en colores!	2D
!Shin Chan: Flipa en colores!	Action
!Shin Chan: Flipa en colores!	Platformer
!Snooker!	Billiards
!Snooker!	Sports
!The Claw!	Gambling
"Aha! I Found It!" Hidden Object Game	Hidden Object
"Aha! I Found It!" Hidden Object Game	Puzzle

The publishers page displays the games and their appropriate publishers. The search bar on this page provides the ability to search on different attributes depending on what the user selects in the dropdown menu.

Title	Publisher
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
!4RC4N01D!	armogames
!4RC4N01D! 2: Retro Edition	armogames
!4RC4N01D! 3: Cold Space	armogames
!4RC4N01D! 4: KOHBEEP edition	armogames
!Anyway!	SGS
!BurnToDie!	DackPostal
!Card++	SSG
!Dead Pixels Adventure!	DackPostal
!LABrpgUP!	UPandQ
!nsane	UIG Entertainment
!nsane	UIG Entertainment
!Peace Phantom2!	armogames
!Que Pasa Neng!	Atari SA
!Rebolt!	Flashbang Studios
!Shin Chan: Flipa en colores!	Banpresto
!Shin Chan: Flipa en colores!	505 Games
!Shin Chan: Flipa en colores!	Daewon Media Co., Ltd.
!Snooker!	TTCX Inc.
!The Claw!	CrazyBits Studios
"Aha! I Found It!" Hidden Object Game	Ateam
"Aha! I Found It!" Hidden Object Game	Ateam
"Aha! I Got It!" Escape Game	Ateam
"Aha! I Got It!" Escape Game	Ateam
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Hello, world."	Nitro+
"klocki"	Megabyte Bomb
"Kuri" smash	RucKyGAMES

The developers page displays the games and their appropriate developers The search bar on this page provides the ability to search on different attributes depending on what the user selects in the dropdown menu.

Title	Developer
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
! That Bastard Is Trying To Steal Our Gold !	WTFOMGames
!4RC4N01D!	armogames
!4RC4N01D! 2: Retro Edition	armogames
!4RC4N01D! 3: Cold Space	armogames
!4RC4N01D! 4: KOHBEEP edition	armogames
!Anyway!	SGS
!BurnToDie!	DackPostal
!Card++	SSG
!Dead Pixels Adventure!	DackPostal
!LABrpgUP!	UPandQ
!nsane	Visual Imagination Software
!nsane	Visual Imagination Software
!Peace Phantom2!	armogames
!Que Pasa Neng!	Phoenix Games
!Rebolt!	Flashbang Studios
!Shin Chan: Flipa en colores!	Inti
!Snooker!	TTCX Inc.
!The Claw!	CrazyBits Studios
"Aha! I Found It!" Hidden Object Game	Ateam
"Aha! I Found It!" Hidden Object Game	Ateam
"Aha! I Got It!" Escape Game	Ateam
"Aha! I Got It!" Escape Game	Ateam
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Glow Ball" - The billiard puzzle game	WTFOMGames
"Hello, world."	Nitro+
"klocki"	Megabyte Bomb
"Kuri" smash	RucKyGAMES
"You have a choice. Make it."	Venusaur
#1 One Direction Fan - The 1D Fan Quiz	Howl Entertainment