Programming
(Please ask us to elaborate on any of these topics)

{ ✓} Show a diagram of at least one element of the game logic (i.e. decision tree, AI process, player progression)

We have provided a diagram documenting an aspect of our game. Please ask us for an explanation of the diagram

{✓ } Describe a game object or entity in detail, including its properties and functionality

One of our main game objects are the rhythm circles. The Rhythm Circles include many different properties, including whether or not they are visible, their x and y coordinates, the rotations that they start at, the angle that they start at and the and their current angle, as well as information on whether or not they have been hit. Functionally the rhythm circles are objects that move across the screen and check to see whether the player has hit them when input is detected in the game. Rhythm Circles also include some small animations when drawing (smooth appearance) as well as ways to render themselves and move around the radar circles. Rhythm circles can also tell when they have been hit and notify other functions that they have been hit so that they can removed from the big list of circles within a song.

{✓} Demonstrate a function (or equivalent) that is used in multiple places

One function that is used in many places is the drawStringDown function which is a function that takes in an x, a y, a string, and a graphics component. Written by Team Henry, this function is used several times within the menu state in order to draw strings downwards on the screen instead of in the regular, horizontal orientation.

{✓} Comment or otherwise document the code

Code is commented locally and is documented on GitHub and the developer blog.

{✓} Use variable and function names that accurately represent their purpose

Much attention has been focused on making this game accessible to the public in addition to the actual development team itself. That is why the game is coded relatively cleanly to allow programmers who are not too familiar with the code get acquainted fairly easily.

{✓} Demonstrate some interesting or unique functionality of your game engine

One of the unique things about our game engine is it's circular feature and complete coding. The entire engine was coded by Team Henry in java, using the slick2d graphics library. (Ask us for more details)

{✓} Have uses 3D coordinate space. 3D rendering isn't necessary necessarily required OR Game does not use 3D, but uses a pseudo-3D method such as parallax or isometric OR Game is 2 and uses z-indexing to properly order background and foreground objects

Game orders different items on the screen based upon their priority in the game. (ex. rhythm circle tails (for long notes) are drawn under the rhythm circles, background circle animation on menu screen is also drawn on back of the menu screen) (Ask us for more examples)

{✓} Release your source code online under an open source licence (i.e. GPL, MIT, CC0)

All the code is available to the public on GitHub and is open source under the MIT license.

{✓} Describe your testing and debugging process and a change that you made because of it

One of the testing processes that we go through is making sure that the rhythms sync up correctly to the music. To do this, we will close our eyes and try to hit the beats in time with song instead of as they appear. We have had to make several changes to our code engine to accommodate rhythms that do not match the song.

{✓} Describe how you refractored or optimized some of your code

One of the ways we refactored the code was by changing the rhythm engine to run more smoothly. (For detailed explanation please ask us)

{✓} Game can be paused - or pausing is unnecessary

Game has fully implemented paused screen where the player can exit the current song or resume playing.

{✓} Include a high score table or some kind of persistent record of previous plays of the game

High scores can be found in the high score section of the game, which can be accessed from the main

{✓} Show a screenshot of an early build of the game running with placeholder art

The developer blog and website clearly documents older versions of the game that used placeholding art for testing purposes.

{✓} Describe a programming challenge you overcame and your solution to it

One of the greatest challenges that we overcame was creating the rhythm engine itself. At first it was thought that we would need to time the rhythms with the songs (keeping track of where we are in the song). What we actually did to solve this problem was to implement our circular element into the game. Using this circular element we instead timed the circles based upon an invisible line that rotated around a circle, giving us the rotations and angle that circles could move and appear at, and allowing us to not keep checking where we are in the song. (Ask us for other examples)

{✓} Use source control - or back up multiple versions of your source code on a server (e.g. OneDrive, Google Drive, Dropbox)

Game is fully available and updated relatively frequently on GitHub where we you also roll back to old versions of the game.

{✓} Include a menu screen with more than just start and quit

Menu screen includes two different game modes (Story and Arcade) as well as several other options like High Score, Options, and Exit.

{✓} Include a credits screen

Credit screen can be found at the end of story mode. (Ask us for a demonstration of it)

{✓} Game has volume controls or a mute button

Players can control the volume of both the sound effects and the music in the game. These controls can be found in our full fledged options menu.

Theme & Style

{✓} Game is built completely around theme or Game is somewhat connected to theme

Full Circle was built around the themes of Heros and is a unique adaptation on the rhythm genre.

{✓} Use the theme creatively by choosing a specific part of it to focus on or Use theme creatively by adding outside elements in addition to the theme

Inclusion of character traits through gods shows how to become a more balanced hero, as the hero's journey progresses.

{✓} Game exists outside classic genre boundaries or Game fits into a specific genre

This game fits into the rhythm game genre however utilizes a story mode in order to create a immersive gameplay experience.

{✓} Research the theme and explain what you learned

The hero's journey is about a hero improving themselves and using their newfound traits to improve the world around them. We reflect that by having each god teach the hero a new skill

{✓} Theme is expressed through gameplay (the player's actions must reflect the theme)

Bragi is simple notes, he teaches the player the basics of dance. Thor is holding, he makes the player show courage by holding steadfast to the beats of the song, the hero becomes more courageous this way. Loki is a trickster, he introduces extra rings for the player to hit, essentially chords. This improves the player's dexterity and teaches them how to be cunning

{✓} Game communicates a story of some sort

Followers of the gods are fighting, you go on dance battles with the deities in order to restore balance to the world. Story progresses through text and dances

{✓} Story is shown through means other than text or static images

The story is presented through advancing text, animated backgrounds, and through the rhythm phases.

{✓} Game takes place in a clear and vivid setting

The unique gameplay and circular artistic theme create a cohesive feeling for the game that is felt in each of the settings in the story

{✓} Game environments contain information about the setting

NPC's discuss the change in setting, different atmosphere in different areas.

{✓} Create a storyboard or sketch of at least one scene of screen in the game

Background image on Toshiba is concept art / sketch of outside of hall scene

{✓} Game is accessible to a wide audience

Because of the varying difficulties in the songs and ease of use this game can be available to many different ages and sizes. In addition the style of game appeals to the mass market because of the open nature.

{✓} Game features varied environments or areas

There are various halls of the gods where the player battles guards outside and gods inside. The environment changes dynamically.

{✓} Game has specific artistic style that stands out

Huge emphasis is put into circular art. Much of the art is created algorithmically through trigonometry and the rest is developed in a way to emphasize the circular aspect of our world.

{✓} Game features character development

The whole premise of the game shows the main character moving through the trials and evolving as times go on.

{✓} Create a reference guide to the story, background, or characters present in the game

Arts and Assets

{✓} All of the game's assets (sprites, models, textures, etc.) were made by the team or only some of the game's graphical assets were made by the team

All art was manually generated by the team from scratch in Photoshop or generated using very complicated trigonometry in the code.

{✓} Use 3D models in your game or 2D sprites are generated from 3D models, vectors, photographs, drawings or another source

The art from the game was generated from various different photographs and drawings. This lends to a very compelling composition.

{✓} Show off your concept art

Found on the developer's blog the concept art was fairly crude. Throughout the development of the game the concept art improved and evolved into where it is today.

{✓} Use fonts tastefully (i.e. non-default fonts that match the style of the game)

The game consistently use the aesthetically pleasing Beleren font. This font is matches the mood of the game and fits well with the rest of the visuals.

{✓} The graphical style is consistent

There is a consistent circular motif and art style that can be found throughout the game. The RGB colors are not only found in the game but also in the graphic of our t-shirts!

{✓} Use animated graphics

The graphics in the introduction phases and throughout the story modes are manually animated using computer programming. This are not pre-rendered videos that we have loaded.

{✓} Enhance the game with visual effects that don't affect gameplay (particle effect, atmosphere)

As seen by our introduction screens, particle effects, and animations, the additions to not affect gameplay but instead add an additional level of sophistication.

{✓} Include a menu or title screen with original art and assets

Not only are the assets original they were programmed from scratch in order to be able to be manipulated in such a way.

{✓} Inform the player of the game state (health, score, progress, etc.) through the user interface or through the game world

As the player goes through a song there are bars on the left and right side of the screen that tracks progress. Even the color of the screen adapts to fit the player. After each rhythm there is an in-depth synopsis of the performance.

{✓} Soundtrack consists of three or more tracks or Soundtrack consists of two tracks or Soundtrack consists of one track

This game displays over multiple original tracks that make up the audio portion of the game. There are many songs playable and found throughout the game.

{✓} Soundtrack was made by team

The music of the story mode was generated by Wilson team members and the soundtrack was compiled by various people on the team.

{✓} Game has sound effects or Game features custom sound effects made by the team

The game uses many sound effects from the introduction, to the menu screen, to the gameplay. A clear example of this is when a player gets a rhythm incorrect an original sound effect is played to give feedback.

{✓} Audio changes dynamically based on gameplay (e.g. distant sounds are quieter, music cues respond to gameplay)

The soundtrack changes to the mood of the game in order to advance the gameplay. In addition the rhythms are specifically generated for each track!

{✓} Audio is well-synced with visuals

Each song is carefully synced with not only the mood of the gameplay but also the in-game rhythms. In addition if a player steps out of line with a rhythm then they are promptly cued by a sound effect.

Professionalism

{✓} Describe what each team member contributed to the project

The main developing role was accomplished by David Anuta. David played a large role with the overall implementation of all aspects of the game. Kyle Sautter was the main art & assets guy and played a critical role in the formation of the story. His work includes audio work, generating animations, and designing the script. Edward Szczepanski worked on various things such as graphical design interfaces, building and finishing the dance pad and public outreach. Much of the documentation was completed by Edward.

{✓} Document meeting minutes or other notes regarding team decisions

We have documented on dry erase boards the various decisions we made and also the various changes we have made to the design of the game. These changes were also reflected in the design document and in the actual game itself. The comments in the open source GitHub also provide great documentation for the changes that have happened to our game over time.

{✓} Describe how two or more team members worked together on a single task

The story mode was worked on by many people. The first version of the text box scrolling was coded by Edward and revised by David. The story text itself was generated between David and Kyle. The

art was rendered by Kyle. It took all three of us in order to make a successful story mode and the outcome is quite stunning.

{✓} Describe a conflict the team resolved

Coming close to the deadline for OGPC Team Henry was thinking that the dance pad was not going to be finished in time. In fact David believed we should just scrap the idea. However after some leaps made with the arduino and velostat material everything fell together. The finished dance pad is highly functional and aesthetically pleasing.

{✓} Describe the role of technical mentors or other outside resources used

One of the biggest technical mentors throughout this past two years were the community of people in the Wilson Computer Science department. The graduated OGPC were great inspirations in showing what a game can be. In addition Chris Bartlo, our CS teacher, has played a very large role in mentoring and has changed the way the game is dramatically. If we ever had a question on what people thought we always had many great opinions to draw off of.

{✓} Get people outside the team to playtest your game

At Wilson High School we had many people test our game and give us feedback. These people included people in the Wilson CS department but also people who have no affiliation. This was very beneficial because it gave us a balanced perspective for the game in order to make the experience appealing to a wide variety of audiences.

{✓} Every team member speaks during the presentation

Each team member has had many unique roles and we have all prepared things to say. One of the reasons that Team Henry has succeed is because of our diverse skill sets and ability to work off eachothers' strengths.

{✓} Presentation includes a visual aid such as a powerpoint, poster board, or website

The presentation includes a powerpoint and also demos aspects of the website. The goal is to demonstrate the scope of Full Circle and have many resources available for our audience.

{✓} Presentation includes screenshots of the game

The presentation includes new screenshots of art and gameplay however also documents some of the progress that has been made on Full Circle.

{✓} Give the game's elevator pitch (pitch the game in ~1 minute. may be during the presentation of not)

The first part of the presentation is a pitch in order to quickly attract the attention of a potential gamer or even investor.

{✓} Bring team business cards, poster, flyers, or other promotional materials

For the Challenge we have brought flyers that have QR codes. This can direct people to more information about our game and our twitch streaming channel.

{✓} Coordinate your team's dress on event day (t-shirts, matching colors, themed with your game, etc.)

Every member is wearing a plain t-shirt in a standard RGB color. This is to match the the color scheme of our art and our dance pad!

{✓} Create a physical mascot for your game (plushie, sculpture, papercraft, etc.)

We do have a physical mascot and it is a 3D printed Trojan head, the official symbol of Wilson High School.

{✓} Describe the game's target audience

The target audience of this game is very large and is made to encapsulate anybody who likes to dance. Because of the ability to adapt the difficulty of the rhythms and songs the game can easily adapt to any one's specific tastes.

{✓} Maintain a development blog or social media page

We have a development blog and that is routinely update on the Team Henry Website.

{✓} Publish a tutorial on a problem you solved during development

One of the problems we were facing was deploying a playable version of the game. The issue was in working with the jar files in order to make an exe file. The solution was to publish a tutorial on the website that taught people how to set up the developing environment. This does multiple things. It allows people to play our game, teaches our players valuable skills, and enables them to make open source modifications.

{✓} Make a post advertising your game on the official OGPC subreddit

Team Henry made a post on the OGPC subreddit and it directly links to our developer blog.

{✓} Finish and release your game online before the day of the Main Event

The game is fully functional and uploaded to the public GitHub. This is all before the main day of the event. Although this version is complete there will always be new updates to improve the playing standards.

Game Design

{✓} Use three or fewer buttons for your game's controls or Use a mouse and up to one button for your game's controls or Use some other input device that is comparable to a mouse and up to one button

At first the game was designed to have five buttons however after this achievement was announced the whole team decided to change the interface. Instead of five buttons the game now has three buttons which can be used to activate five rings. This innovative button layout actually works really well in a dance game because it simplifies the feet movements.

{✓} Demonstrate that game has random elements and describe how odds were determined or Demonstrate that game is deterministic (no randomness) and describe why that is important to the game

This game is determinist and for each rhythm there is no randomness. The only thing left to chance is the player's skill. This is necessary for a competitive rhythm game because players would get frustrated if they were not performing in game and their outcome was based to chance. When a player does poorly the only person they can blame is themself.

{✓} Explain how the scope of the game was limited or reduced

This game originally had ambitions on head to head dance battles however we found that this was unrealistic given our time frame and technical restraints. In addition there was some hope for greater interacting with online resources however we didn't get time to integrate those technologies. Overall Team Henry is proud of the progress.

{✓} Explain how the game would be expanded with more time and resources

With additional time this game would have a lot more polish. This means that the GUIs would be slightly nicer, more art would be added to the story mode, and various songs would be added. Additional music or modes to the story state could also be used. Most functionality is already implemented.

{✓} Use an original game mechanic or Use an existing game mechanic (or combine mechanics) in an innovative way

This game is the definition of innovative with the special circular rhythm circles that add a new element to this popular genre. In addition the physical interfacing with the dance pad adds a fun gimmick to the game that makes it extremely appealing.i

{✓} The game starts simple and introduces new features gradually

The story state is really good at introducing the many gameplay features slowly. In addition a player can jump into the story state and do the easy ranked songs which don't have some of the complicated game elements. This makes the game very accessible to newcomers.

{✓} The game communicates new mechanics and challenges to the player effectively (such as via a tutorial)

The player is eased into the more complicated measures through the story state. In addition the story helps teach the different mechanics such as holding down a rhythm. A tutorial is not needed because of the simple nature of the game and control layout.

{✓} Player must use creative solutions to overcome challenges

Because of the innovative control scheme players must adapt to this game. First and foremost the dance pad form factor is a challenge and sometimes unconventional dance strategies are the most effective. Another underestimated thing is that cardiovascular endurance plays a large role in the success of a Full Circle player. The circular nature of the rhythms also prompts the user to expect the circles at different rates.

{✓} The game gives feedback to the player based on their performance and actions

Feedback is demonstrated in many different forms. First in foremost there are bars on either side of the rhythm circles telling the player how they are doing. Next the background color changes depending on performance. If a player misses something a sound effect will blare. Finally after the song is over there are complete analytics that go over accuracy.

{✓} Game allows the player to have a notably different experience when replaying the game

The game experience is extremely different each time you play. The primary reason is because when you complete the game the difficulty increases substantially. The other factor that lends to near infinite replayability is the arcade mode with many different rhythms with varying difficulties.

{✓} Write a design document

Multiple versions of the design document are available which demonstrate the main theme and background to our game.

{✓} Shows updates to the design document that reflect changes in your design

There are various versions of the design document, spanning the time of development, and there are market updates to the doc. The design changed through the process of development and as the mission changed.

{✓} Create a development schedule with at least 3 concrete milestones (gameplay complete, art complete, etc.)

Throughout the progress of Full Circle there were many concrete milestones. These including getting the arduino working with velostat material, working dance pad, and functional story mode. The progress was documented on our development blog and other sections of our website.

{✓} Break development milestones into smaller tasks, and assign time estimates to each other

Much of the development was broken into manageable tasks and assigned to various team members. These tasks were documented on the dry erase board sketches in addition to the website.

{✓} Show off a paper prototype of your game (picture is okay)

Paper prototype is demonstrated by the many pictures of sketches that we have documenting our game. In addition we have designs and proofs of concepts that we used to prototype our game.