Compsys 305 Project(Group APA)

*Abstract*

—Layout titles, Mouse , VGA Sync, FSM,Block Diagram.Design,Display, Pipes/LSFR, Ball , Characters/text, Equations/Appendix. Acknowledgements ,Switch 0 pause, Button 2 selects game mode, Button 1 training mode, Button 0 back to the main screen, Max level=4 , Counts 7.5 seconds level increase, Lives = 3. Every 10th pipe extra life. Vertical sync = 699 \*524/25Mhz.

In this report it will cover the block diagram and game design of our project. The goal of our project is to design a game which is based off the game flappy bird using a DE0 board displayed on a VGA board. The design of our game is created in key components such as the pipes which generate the obstacles in the game and the mouse allows the user to control the bird. The user is able to choose from two modes, training mode and regular mode. As the player progresses through the game the level will increase, and the bird will move faster. There will be special gifts created which allow the user to pass through objects. The controls are the mouse and the DE0 board allowing the user to operate the game.

# Introduction

The goal of this mini project is to design the game Flappy Bird and implement it on the DE0 board in VHDL. The game will be controlled and played by the user using a PS/2 mouse, DIP switches and push buttons on the DE0 board. This game will be displayed on a VGA board with a resolution of 640 x 480 pixels.

The objective of the game is to keep the bird alive by avoiding obstacles such as pipes. The player can keep the bird flying by using the left click on the mouse in which they will make the bird fly in between the pipes. If the bird is not flapping it will free-fall towards the ground.

The plan for this mini project is to have to have two game modes, a training mode and single player mode. Training mode will start at the lowest level and allow the user to keep going until the bird dies. If the player loses, then it will have a menu in which they can restart the training mode or go back to the main menu.

In single player mode, the player will be given a specific number of lives at the start of the game. The player will continue with the game until their lives run out in which they can restart the single player mode or go back to the main menu. If the user hits an obstacle such as the pipes, the bird will lose a life and respawn where the life was lost.

The difference between regular mode and training mode is that the training mode will not increase the level as the user progresses after a certain amount of time. As the levels increase the speed will also increase.

For our bonus features there will be a mystery box in our game that the user can pick up using their bird will allow the bird to increase their life.

# System Block Diagram

This game is created by key components such as the display, mouse and vga sync. Our entire system hierarchy is shown below in figure 1.

# Game FSM

# Game Design

## Main Menu

The code for the Main menu screen can be found under the menu.vhd. The main menu is shown below in figure 2.

The main menu will print the team name

## Mouse

* Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as “3.5-inch disk drive”.
* Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.
* Do not mix complete spellings and abbreviations of units: “Wb/m2” or “webers per square meter”, not “webers/m2”. Spell out units when they appear in text: “. . . a few henries”, not “. . . a few H”.

Identify applicable funding agency here. If none, delete this text box.

* Use a zero before decimal points: “0.25”, not “.25”. Use “cm3”, not “cc”. (*bullet list*)

## Pipes

The equations are an exception to the prescribed specifications of this template. You will need to determine whether or not your equation should be typed using either the Times New Roman or the Symbol font (please no other font). To create multileveled equations, it may be necessary to treat the equation as a graphic and insert it into the text after your paper is styled.

Number equations consecutively. Equation numbers, within parentheses, are to position flush right, as in (1), using a right tab stop. To make your equations more compact, you may use the solidus ( / ), the exp function, or appropriate exponents. Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Punctuate equations with commas or periods when they are part of a sentence, as in:

*a**b* 

Note that the equation is centered using a center tab stop. Be sure that the symbols in your equation have been defined before or immediately following the equation. Use “(1)”, not “Eq. (1)” or “equation (1)”, except at the beginning of a sentence: “Equation (1) is . . .”

## Ball

## Pause Screen

## Display

* The word “data” is plural, not singular.
* The subscript for the permeability of vacuum **0, and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
* In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
* A graph within a graph is an “inset”, not an “insert”. The word alternatively is preferred to the word “alternately” (unless you really mean something that alternates).
* Do not use the word “essentially” to mean “approximately” or “effectively”.
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* Be aware of the different meanings of the homophones “affect” and “effect”, “complement” and “compliment”, “discreet” and “discrete”, “principal” and “principle”.
* Do not confuse “imply” and “infer”.
* The prefix “non” is not a word; it should be joined to the word it modifies, usually without a hyphen.
* There is no period after the “et” in the Latin abbreviation “et al.”.
* The abbreviation “i.e.” means “that is”, and the abbreviation “e.g.” means “for example”.

An excellent style manual for science writers is [7].

# Appendix

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Text heads organize the topics on a relational, hierarchical basis. For example, the paper title is the primary text head because all subsequent material relates and elaborates on this one topic. If there are two or more sub-topics, the next level head (uppercase Roman numerals) should be used and, conversely, if there are not at least two sub-topics, then no subheads should be introduced. Styles named “Heading 1”, “Heading 2”, “Heading 3”, and “Heading 4” are prescribed.

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1. Table Type Styles

| Table Head | Table Column Head | | |
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| Table column subhead | Subhead | Subhead |
| copy | More table copya |  |  |

1. Sample of a Table footnote. (*Table footnote*)
2. Example of a figure caption. (*figure caption*)

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

##### Acknowledgment *(Heading 5)*

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks ...”. Instead, try “R. B. G. thanks...”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

##### References

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1. G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. *(references)*
2. J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.
3. I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.
4. K. Elissa, “Title of paper if known,” unpublished.
5. R. Nicole, “Title of paper with only first word capitalized,” J. Name Stand. Abbrev., in press.
6. Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interface,” IEEE Transl. J. Magn. Japan, vol. 2, pp. 740–741, August 1987 [Digests 9th Annual Conf. Magnetics Japan, p. 301, 1982].
7. M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.

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