Bilkent University

Department of Computer Engineering

CS319 – Object Oriented Software Engineering Project

Project short-name: Donkey Kong Game

Design Report (Final Draft)

Group 3E

Fuad Ahmadov

Çağatay Küpeli

Sine Mete

Arkın Yılmaz

Supervisor: Bora Güngören

Analysis Report (Final Draft)

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# Introduction

## Purpose of the System

Donkey Kong Game is a re-mastered version of popular arcade game, Donkey Kong 1981. In this game, user try to reach finishing point without hitting any hostile obstacles. It is one of the well-designed game in its time, so it is user-friendly and easy to understand. Even though Donkey Kong 1981 was a successful game, it was lacking some features. In order to add them, the design and gameplay of the game is altered.

In addition, the original levels in Donkey Kong 1981 will not be remade for this system, instead levels will be redesigned. This allow us to show the new features of the game and make it much easier. This design choice allow us to make levels that shows what are the features added into the game.

## Design Goals

**Usability:** The design of Donkey Kong 1981 inspired us in terms of usability requirement. A person who never played Donkey Kong 1981, can play this game without any hesitation because every arcade game use the similar or same patterns for user inputs. We created a list of characteristics the user controls share in software.

* Control inputs should make sense. For example you cannot use UP button one keyboard to go right or left.
* Control inputs should be close to each other in order to create better gameplay experience.
* Control inputs should be easy to understand.
* There should be always a help option to explain core concepts of the game such as control inputs.

**Performance:** Performance is important design goal for games. You cannot expect people to enjoy the game if it has some optimization problems such as sudden FPS drops and freezes. In other words, the game should run at high FPS and should preserve it.

**Portability:** Portability is an important topic for any software. In order to make Donkey Kong Game portable, Donkey Kong Game will be developed with Java because Java is one of the few programming languages which allows cross-platform portability. This attribute of Java allows Donkey Kong Game to work any environment which installed JRE; therefore user will not worry about operating system requirements.

**Reliability:** Reliability is another important design goal for games. The game system should be bug-free and it should not crash due to unexpected reasons. Reliability of system will be tested through the development of the system in order to not have any bugs and crashes at execution time.

**Trade-Offs**

**Reusability vs. Performance:** Reusability is important for designs that might see some future usage in other projects. However we have no plan of making another arcade game. Therefore we are not planning to make our code usable unless we might decide to use the functionality inside another class.

**Memory vs. Speed:** Even though memory usage is important in order to make the game fast as possible, we are not concern about memory space.

Every objects which can be seen on the game panel will be created separately in order to make collision detection faster. This design choice will cost us so much memory; however, it will help us to detect collisions faster.

## Definition, Acronyms & Abbreviations

**Frame Per Second (FPS):** A measurement for how many unique consecutive images occur each second.

Arcade Game: A type of game genre that is a fast-paced action game, requiring hand-eye coordination skill to play.

**Cross-Platform:** Software that can run on multiple types of Operating Systems.

# Software Architecture

# System Model