Project Documentation

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***Abstract*—For our project, we sought to use gamification elements to make the process of learning to type more fun and rewarding. Through an iterative development process we created and improved features which primarily used gamification to allow users to learn to type more easily. The final draft of our application is hosted at https://luketerry0.github.io/hci-project/. The code source code for the project can be found at https://github.com/luketerry0/hci-project.**

I. Introduction

Our project began with inspiration from two different sources. We knew we wanted to make a game, but we had to decide what type of game would be feasible and practical. Making a large traditional game can take years of development, so when searching around the Internet for ideas, we came across a website called monkeytype.com. This website is designed to help users build typing fluency by displaying text and allowing users to type the text with a timed test as fast as they could. While testing it, we realized that competing with each other to get high scores was an enjoyable user experience. While searching we also stumbled upon games such as Stimulation Clicker, which is a game designed to simply have a user click a button a certain amount of times, and then accumulate currency and purchase upgrades that improve the user experience. We decided that an interesting route to explore for our project would be some hybrid version of these games, taking the motivational aspects of clicker games and fusing them with a more helpful purpose such as learning to type faster. Out of this we decided to center our project on making a typing game with gamified elements to get users to want to continue playing the game as long as possible to improve their typing skills.

II. User Goals Analysis

Surveying other students, we found that one of the reasons that people enjoy using some typing games over others is the amount of steps they have to get through to actually start typing and practicing. This led them to prefer games such as Monkeytype over others such as NitroType. Monkeytype allows users to start typing as soon as they open the webpage, without any need to click through a games menu or sign in with an account. This led us to realize that ease of use would be one of the main factors in users choosing to play our game as opposed to others. This means that as soon as the user enters the website, they should be greeted with text to type and an intuitive interface that has almost no learning curve. The respondents also noted that the minimalistic design helped MonkeyType to feel more like a game for adults rather than a children's typing game. Learning to type faster as an adult can be a task that feels embarrassing for some, as many people often learn to type fast in K-12 school. By including a minimialistic design this lowers the perceived mental barrier to entry for some by allowing them to have fun with the game without having the motivator being racecars going around a racetrack. Students surveyed had also stated that MonkeyType did not necessarily reward users for continuing typing practice for long periods of time, only having small tests that would end as soon as the user hit a word count or a time limit. This led to us choosing to use a money-based points system, which would then reward users for continuing to type for longer, rather than only typing faster.

III. First Iteration Identified Issues

This section focuses on the iterative process we took. Since our UI is not entirely based on improving an existing app, we began with a rough prototype, and examined how different features could be improved.

The first draft of the app (figure 4) included the capability to type the text and drop a simple plinko ball into our system. It included an upgrades menu as well as a menu on the left hand side. The main currency of the game was displayed as a flipping counter, which flipped up in a satisfying way when one of the balls fell into one of the plinko buckets.

Confronted with the interface, however, a handful of people who tried our app didn't know what to do. There was no cue to the user that to play the game, they should begin typing the word "Economy". This issue is broadly related

Fig. 1. Third Draft of the App

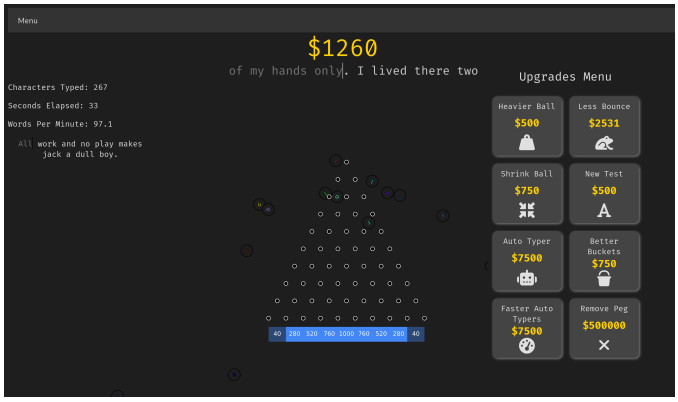

Fig. 2. Third Draft of the App with Dark Mode Enabled

to the HCI principle of clarity: our app was not adequately communicating to the user that they need to type. Using the standard design motif of a cursor was an easy way to indicate that we expected the user to type the words on screen.

We found that the flipping score indicator caused problems as well. Although it was satisfying, when the user accumulated more than a couple points, it couldn't flip fast enough to keep up with the updates and accurately display the user's balance. In order to maintain accuracy in our UI, we eventually replaced it with a simpler display that updated without an animation.

We also found that it was not intuitive to users to open the upgrades menu in order to progress in our game. Since gamification of learning to type is a main design goal of our software, we chose to move upgrades out of a collapsible menu and display them on the right side of the interface. This increased the clarity of our application, clearly displaying to the users what upgrades were available for them.

A couple people who played the game also suggested that we should display some stats about typing speed and elapsed time to give users a sense of immediate feedback outside of the plinko-based balance. We chose to display this in the empty space on the left side of the screen.

You can see the changes between the first iteration of our app and the second iteration by comparing figures 4 and 3.

After the second draft, we sought to expand the gamification in our app and make some design changes to make the app more visually appealing.

We added the ability to buy passive "autotypers" which would automatically drop plinko balls as you typed, as well as expanded the number of upgrades. In order to make the user experience more comfortable and accessible, we also added a dark mode, which can be toggled within the menu on the left hand side of the screen. We added icons and sounds to the upgrades menu, which we felt made the game more fun. We also re-worked many of the fonts and made minor adjustments to the layout to make the app look more cohesive.

This final draft is hosted at https://luketerry0.github.io/hci-project/. Feel free to give it a try!

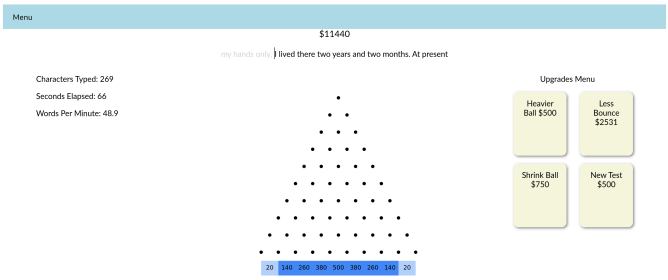

Fig. 3. Second Draft of the App

IV. Design Rationale

At each iteration, we tested the app to find bugs as well as develop opinions of how the UI could be improved. The development team, as well as a handful of other students, were given the app, observed, and qualitatively asked what they liked/didn't like, and what they would change.

The biggest and most pressing issue between the first and second iteration was that many users did not know that they should type when we originally presented them with the app.

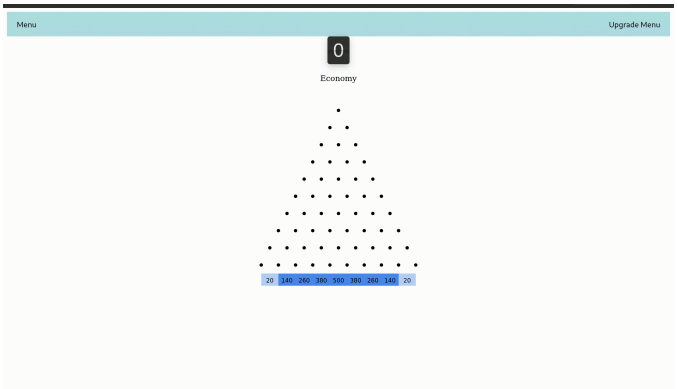

Fig. 4. First Draft of the App

This is what led us to add a blinking cursor to the text interface: It's a common design that led people to understand that they should begin typing. The HCI principle of Clarity needed to be emphasized further, and the cursor was a way for us to do this.

Once we verbally guided them to type, they found the plinko system fun, but largely played without ever exploring the menu or upgrading anything. Many of them didn't read the navbar, and never even realized that using the currency displayed to buy upgrades was an option. Because of this, we chose to make the upgrades menu a grid of buttons which is persistently displayed rather than a collapsible menu.

The lack of typing stats did not directly cause any usability issues, but it was directly suggested as a feature by people who are familiar with other apps that are used to learn typing. In response to this feedback, we added the stats interface.

The dark mode was added proactively out of concern for accessibility. While users didn't directly ask for it, and a lack of a dark mode didn't degrade the user experience, for the visually impaired having a choice of color scheme could be a very important feature of our app.

After making the changes and developing the second iteration of the app, we once again played the game and gave it to a small number of testers to play. They found the app fun and the experience rewarding, validating our design decision to include gamification elements. They wished there was more upgrades, and found the general interface of the app ugly, however. This led us to rework the fonts and colors, and develop some more upgrades.

V. Conclusion

We built a typing game. Our main goal was to make it fun, simple, and helpful for people who want to get better at typing. We combined ideas from typing tools and idle games to create something unique. To keep users interested, we added game features like upgrades, points, and rewards. These features turn typing practice into a more engaging experience.

At first, we made a basic version of the app. After using it ourselves, we noticed several problems and talked about ways to improve it. We made many changes based on our own testing and team discussions. This helped us fix issues early and make the design better step by step.

We added a blinking cursor so users would know where to start typing. We made the upgrade options always visible so they're easy to use. We added typing stats to show speed and progress. These changes made the game clearer and easier to use. We also added a dark mode to improve visual comfort. Over time, we made small design updates to colors, fonts, layout, and icons to make the app look and feel better.

The final version of our app works in a web browser. It does not require downloading or logging in—users can start typing as soon as they open the website. The game rewards users the longer they type, making it fun and helpful at the same time.