



USER MANUAL

— *New Hearth*

Team No.4

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1. GENERAL INFORMATION

1.1 System Overview

The first two sections of this focus on a few technical aspects of the project, while still providing useful information to the user. However, if you want to instantly jump into knowing how to play the game, we recommend jumping to section 3 onwards.

New Hearth is a story-based interactive audio game for people with visual impairment or blindness. The software system is developed based on Java 10 and is deployed on Windows Operating System platform. The game creates a virtual environment and allows players to use their voice to interact with the story characters. Its operational status is partially operational and is under development.

1.2 Use of System

New Hearth provides you with access to an entertaining space adventure, allowing you to experience a thrilling storyline with us and communicate with your own chatbot system.

1.3 Hardware and Software

Hardware:

- Personal Computers with Windows OS (recommended Win 10)
- Accessible Windows built-in or external microphones
- Well-connected Internet

Software:

- New Hearth - Main game system

1.4 Organization of the Manual

The user's manual consists of five sections: General Information, System Summary, General Game Instructions, Using the System, and Appendix.

- General Information section gives a brief explanation about the system and its purpose.
- System Summary section provides a general overview of the system. The summary outlines the uses of the system's hardware and software requirements, configuration, data flows and GUI.
- General Game Instructions section explains how to run the game.
- Using the System section provides a detailed description of system functions.
- Appendix is about frequently asked questions about the software.

1.5 Acronyms and Abbreviations

APP	Application	OS	Operating System	GUI	Graphics User Interface
WA	Watson Assistant	T2S	Text-to-Speech	S2T	Speech-to-Text

1.6 Project References

References that were used in preparation of this document in order of importance to the end user.

- <https://www.ibm.com/cloud/watson-assistant-2/>
- <https://www.ibm.com/cloud/watson-speech-to-text>
- <https://www.ibm.com/cloud/watson-text-to-speech>

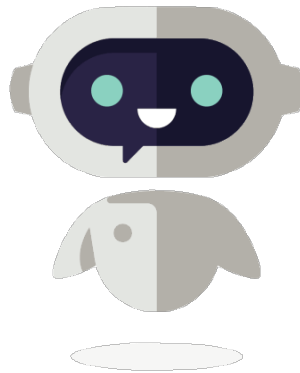
2. SYSTEM SUMMARY

2.1 System Configuration

The Users voice will be recorded once they press a button, 'F', on the keyboard and will stop once a certain button, 'J', on the keyboard is pressed. The voice will then be translated to text through Watson Speech to Text and sent to Watson Assistant directly. After getting a response from Watson Assistant, Watson Text to Speech will be used to translate text to speech and the system will play the synthesized voice. There will be a short wait, however, you will know when to voice your command through a sound effect. This will be explained in greater detail later.

2.2 Main Interface

The design of GUI is very clear and simple since our project is mainly targeted at people with vision loss. The profile is a chat robot, matching the theme of our project. When you start the game, you will see it is waving its hands and giving you a wink.



3. GENERAL GAME INSTRUCTIONS

3.1 Starting Game

The game application is published as an .exe file and is deployed on Windows OS. All you need to do to start the game is clicking the .exe file with the game icon. Since the game is developed based on Maven framework and all the required configurations will take some time to load and import during game initialization, you may have to wait approximately 30 seconds after clicking. For player with vision loss, they need someone else to help them to start the game or make use of programs such as Windows Speech Recognition or Voice-Bot.

3.2 Playing Game

The game is mostly audio-controlled, where player can interact with the game virtual agent using voice. In the game, the agent will ask the player to give a command and the player need to make decisions based on the story context. Also, the player is required to speak as clear as possible so that the agent can recognize the input information and make relevant response. If the voice cannot be recognized, the system will repeat the question/request and will require you to repeat your words.

In addition, the player is required to use keyboards to manipulate the user events. The player can use the keyboard to start and stop recording. These actions will trigger a sound to indicate whether the recording of your voice is beginning. If the player touches any other keys by accident, it will invoke a warning sound.

3.3 Exit Game

Player can quit the game by pressing the 'ESC', which is placed on the top-left corner of the keyboard. However, if the player finishes the story, the game will announce its end and quit automatically.

3.4 Sample Voice Commands

- "start the story" Starting the adventure
- "introduction" Learning the context of the game
- "instruction" Learning the game instructions
- "pick it up" Picking up the object you see (weapon/money/tool, etc.)
- "open the door" Going inside
- "Go straight" Going straight
- "Combat" Starting a war with enemy spaceship
- "run away" Running away the avoiding conflicts
- "leave the room" Leaving the room

The above commands are some of the key words and phrases. The agent will inform the player before making decisions, which is why we aren't listing them all, or it would spoil parts of the story. The words you will need to say should be rather obvious.

4. USING the SYSTEM

4.1 Recording Voice

This game can record user voice for interacting with Watson assistant and the combat system we have created. This functionality can be easily used by pressing the keyboard.

- Start recording
 - Pressing F to start recording.
 - You will hear a warning tone if correctly pressed and another beep voice if wrongly pressed.
- Finish recording
 - Pressing J to stop recording.
 - You will hear a warning tone if correctly pressed and another beep voice if wrongly pressed.

4.2 Exit the game

Pressing 'ESC' to escape the game any time you prefer but please be careful with this, as the game will not be saved.

4.3 Combat with the enemy

In the combat system, user voice will be recorded first, and the system will translate it to the corresponding actions such as attack the enemy, defend, check my status and check enemy status.

- Attack the enemy
 - Pressing F and J to start and finish the recording.
 - Say 'attack the enemy' or other sentences that contain the keyword 'attack' to attack the enemy.
- Defend
 - Pressing F and J to start and finish the recording.
 - Say 'I want to defend' or other sentences that contain the keyword 'defend' to defend the enemy attack.
- Check my status
 - Pressing F and J to start and finish the recording.
 - Say 'check my status' or other sentences that contain the keyword 'my' or 'status' to check the player status which may be helpful for you to decide your future actions.
- Check enemy status
 - Pressing F and J to start and finish the recording.
 - Say 'check enemy status' or other sentences that contain keyword 'enemy' to check the enemy, which may be helpful for you to make relevant decisions.

4.4 Special Instructions for Error Correction

- The wrong key pressed
When you hear the alert voice, this means you pressed an irrelevant key. You should try again.
- Fail to detect certain intent when interacting with Watson assistant

The system will alert you while your voice cannot be used to recognize the intent in Watson assistant. In most cases, you may need to speak again and more clearly and slower than before. However, in some cases, you may need to change what you say, and try and tie your words directly to what Watson Assistant is asking. Remember to say key words.

- **Program stuck**
The main reason that leads to the program not continuing is a poor network. Therefore, please check the network connection immediately, and please change to a more stable network. If it still not works well, it may because the Watson Text-to-Speech API is used up. You will need to pay for more characters as Text-to-Speech only has a limited amount of characters overall.
- **Long waiting time**
The poor network connection will lead to a long waiting time. Please check the network connection immediately and change a more stable network if possible.

4.5 Caveats and Exceptions

- The game running in the IDEA must be under the Java 10 and if you are not using that version, please try our executable version directly.
- Watson Text-to-Speech has a limited number of characters transferring. Please pay more attention to the remaining characters of Text-to-Speech API and change it immediately or pay for the extra character.
- Please be accompanied by others while playing.
- Do not use it for commercial purposes without permission.

5. Appendix — frequently asked questions

- 1) What can I do if there is no response?
 - If you are launching the game, it's common to wait for about 30 seconds.
 - If you are playing the game, there are some possible cases:
 - WA/TTS/SST has been overused.
 - Your computer CPU is overloading.
- 2) Can I use Mac OS or other platforms to run the game?
 - Unfortunately, the game is only deployed on Windows OS.
 - We are still working on the application deployment for different platforms.
- 3) Can the game save my current status?
 - No. Because the whole game is about 20 minutes long, we don't think it's necessary to develop the functionality.
 - In the future, if the game is longer, we will consider that.
- 4) How many stories are there in the game?
 - Currently, only one story but the story has different branches depending on your decisions
 - In the future, we may add more stories with different languages
- 5) Can I see the source code of the game?
 - Sure. It's an open source.
 - However, you cannot use it for commercial purpose.
- 6) Are there any required voice input devices?
 - The built-in microphone in Windows OS is OK.
 - You can use an external device, which may improve the quality of your voice.