Text-to-Speech Adventure

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Introduction and Background

Human-computer interaction needs to offer options to as many players as possible. Unfortunately, hardware and software manufacturers are prone to ignoring the needs of the visually impaired. This extends to gaming, a medium where interactivity is paramount to user experience.

Text-to-Speech Adventure is a room-based text adventure game in the style of the 1977 game *Zork*. In this game. the text will be read using Microsoft Narrator in order to assist blind players. The player will navigate through exists and solve simple puzzles to escape the dungeon. Rooms and objects will be described with a focus on spatial relationships, texture, and temperature to tailor environmental details to blind players.

To eliminate the possibility of the player entering an invalid action, the game will offer the player up to four options at any given moment, represented using **the D, F, J, and K keys** on a traditional keyboard. The action will then be confirmed using the **Space Bar**.

Requirements

Hardware:
- Windows machine
    - Intel/AMD/Nvidia Processor,
    - Minimum Disk Space: 12 KB
- Mouse, Keyboard, and Monitor

Software:
- Operating System: Windows 10+
- Code Editor: Notepad or Visual Studio (2015 or newer)

Player Requirements:
- Basic English reading or listening ability
- Motor ability that allows for use of a traditional keyboard

References

"C# Docs - Get Started, Tutorials, Reference." Microsoft.com, 2019, docs.microsoft.com/en-us/dotnet/csharp/. Accessed 12 Jan. 2022.

"Download SQL Server Management Studio (SSMS) - SQL Server Management Studio (SSMS)." Docs.microsoft.com, Microsoft, 8 Dec. 2021, docs.microsoft.com/enus/sql/ssms/download-sql-server-management-studio-ssms?view=sql-serverver15. Accessed 11 Jan. 2022.

Sample Session

```
A slight, brisk wind blows through the door in front of you, enough to where you get chills, while you hear a creeking sound combined with the
pitter-patter of water dripping from the room at your right. At the heel of your right foot is a heavy orb of smooth texture. To your left is
a rock of chalky texture about the size of the palm of your hand. It seems as though it will cut your hand if you pick it up.

INSTRUCTIONS: Using the D, F, J, and K keys, press the key corresponding with your action of choice.
Your options are:
D. Pick up orb
F. Pick up rock
J. Go forward
K. Go to your right
```

1. The player starts in the <u>Dark Room</u>, where there are two exits to the player's north and west, and a rock and an orb nearby that the player can pick up. The player's options are:
    - (i) Press **D** to pick up orb
    - (ii) Press **F** to pick up rock
    - (iii) Press **J** to go forward
    - (iv) Press **K** to go right

```
F
You picked F. Pick up rock
Press another key to change your option or press Spacebar to confirm.
 Confirming action: F. Pick up rock

You have the rock in your hand. A slight, brisk wind blows through the door in front of you, enough to where you get chills, while you hear a
creeking sound combined with the pitter-patter of water dripping from the room at your right. At the heel of your right foot is a heavy orb
of smooth texture.

INSTRUCTIONS: Using the D, F, J, and K keys, press the key corresponding with your action of choice.
Your options are:
D. Pick up orb
F. Put down rock
J. Go forward
K. Go to your right
```

2. The player presses **F** to pick up the rock and confirms their choice by pressing **Space.** Holding the rock in their hand, the player's options are:
    - (i) Press **D** to pick up orb
    - (ii) Press **F** to put down rock
    - (iii) Press **J** to go forward
    - (iv) Press **K** to go right

```
J
You picked J. Go forward
Press another key to change your option or press Spacebar to confirm.
 Confirming action: J. Go forward

You have the rock in your hand. You go through the door in front of you. The walls have a jagged, rocky texture, similar to the
rock that you are holding. In front of you lies a scale-like mechanism at your waist. Like the walls, it is of rocky texture.
You wonder if placing an object of similar texture on the scale will cause something to happen...

INSTRUCTIONS: Using the D, F, J, and K keys, press the key corresponding with your action of choice.
Your options are:
D. Go backward
F. Place rock on scale
J. Do nothing
K. Do nothing
```

3. The player presses **J** to go forward and walk through the north exit. The player then presses **Space** to confirm that choice. Now in the <u>Stone Room</u>, the player must put the rock on a scale to complete the first task. Holding the rock in their hand, the player's options are:
    - (i) Press **D** to go backward
    - (ii) Press **F** to place the rock on the scale
    - In this case, the **J** and **K** keys have no actions attached to them.

```
F
You picked F. Place rock on scale
Press another key to change your option or press Spacebar to confirm.
 Confirming action: F. Place rock on scale

You place the rock on the scale. A earthquake starts. Once it subsides, there is no noticeable difference in the structure of the room. You realize the sam
e thing may happen if you do something similar with the orb that still lies in the previous room.

INSTRUCTIONS: Using the D, F, J, and K keys, press the key corresponding with your action of choice.
Your options are:
D. Go backward
F. Do nothing
J. Do nothing
K. Do nothing
```

4. The player presses **F** to place the rock on the scale (then confirms with **Space**). With the rock on the scale, the player's only option is to:
    - (i) Press **D** to go backward
    - In this case, the **F, J** and **K** keys have no actions attached to them.

Development Tools and Languages

Operation System: Windows 10
Language: C#
IDE: Visual Studio 2019
Database Management Software: Microsoft SQL Server Management Studio 2018
Platform: Windows 10 PC

```csharp
// ********************** Create a new roomNavigation object **********************
roomNavigation = new RoomNavigation();

// ********************** Initialize Starting Room **********************
roomNavigation.currentRoom = new Room();

// set up connection

sqlCon.Open();

/*** get room description ***/

// write SQL command for the room description
string cmdText = "SELECT Description FROM Scenario WHERE RoomState = 0";
SqlCommand command = new SqlCommand(cmdText, sqlCon);

//send the command text to the sql connection, and build a SqlDataReader
SqlDataReader dataReader = command.ExecuteReader();

while (dataReader.Read())
{
    roomNavigation.currentRoom.setDescription((string)dataReader.GetValue(0));
}

dataReader.Close(); //close the current data reader

/*** get room name ***/
cmdText = "SELECT Room.Name " +
    "FROM Room, Scenario " +
    "WHERE Room.RoomID = Scenario.RoomID AND Scenario.RoomState = 0";
command = new SqlCommand(cmdText, sqlCon);
dataReader = command.ExecuteReader();
```

Pictured above: Code that sends SQL queries to the Room Database for the name and description of the room the player is currently in.

LAPTOP-DG7JVPNB\...e - dbo.SCENARIO

RoomState	RoomID	Description	Opt1Res	Opt1Desc	Opt2Res	Opt2Desc	Opt3Res	Opt3Desc	Opt4Res	Opt4Desc
0	0	A slight, bris...	1	Pick up orb	2	Pick up rock	3	Go forward	4	Go to your r...
1	0	You have th...	0	Put down orb	7	Pick up rock	5	Go forward	6	Go to your r...
2	0	You have th...	7	Pick up orb	0	Put down ro...	9	Go forward	8	Go to your r...
3	1	You go thro...	0	Go backward	3	Do nothing	3	Do nothing	3	Do nothing
4	2	You follow t...	1	Go to your l...	4	Do nothing	4	Do nothing	4	Do nothing
5	1	You have th...	1	Go backward	5	Do nothing	5	Do nothing	5	Do nothing
6	2	You have th...	1	Go to your l...	12	Do nothing	6	Do nothing	6	Do nothing
7	0	You have th...	2	Put down orb	1	Put down ro...	10	Go forward	11	Go to your r...
8	2	You have th...	2	Go to your l...	8	Do nothing	8	Do nothing	8	Do nothing
9	1	You have th...	2	Go backward	13	Place rock o...	9	Do nothing	9	Do nothing
10	1	You have th...	7	Go backward	14	Place rock o...	10	Do nothing	10	Do nothing
11	2	You have th...	7	Go to your l...	NULL	Place orb in...	11	Do nothing	11	Do nothing
12	2	You place th...	18	Go to your l...	12	Do nothing	12	Do nothing	12	Do nothing
13	1	You place th...	19	Go backward	13	Do nothing	13	Do nothing	13	Do nothing
14	1	You place th...	16	Go backward	14	Do nothing	14	Do nothing	14	Do nothing
15	2	You place th...	17	Go to your l...	15	Do nothing	15	Do nothing	15	Do nothing

Pictured above: SCENARIO table of the Room Database. Here each record is identified by a unique RoomState and consists of a RoomID, Description, and the four options the user can take in the current scenario.