Programming Challenge

Don Loree’s Customizable Text to Speech Application

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Group 102

**Challenge**

* Create a text to speech output for Don Loree to use in his everyday life to communicate with his friends and family
* Includes large font keyboard
* Plays audio when Don prompts it to

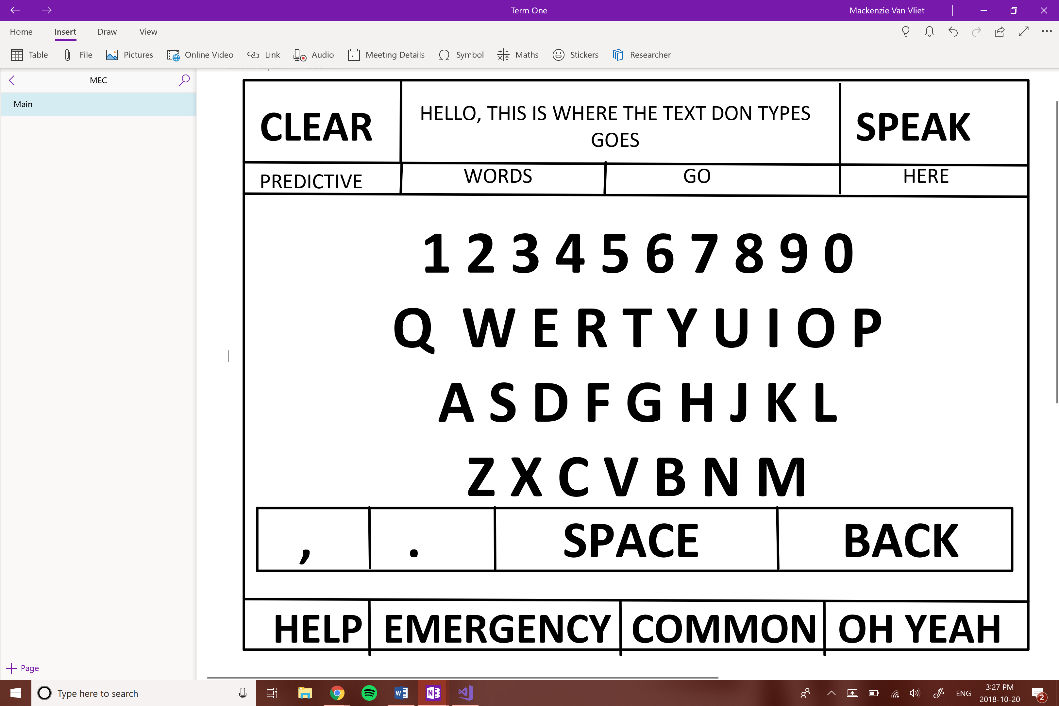
**Inspiration**

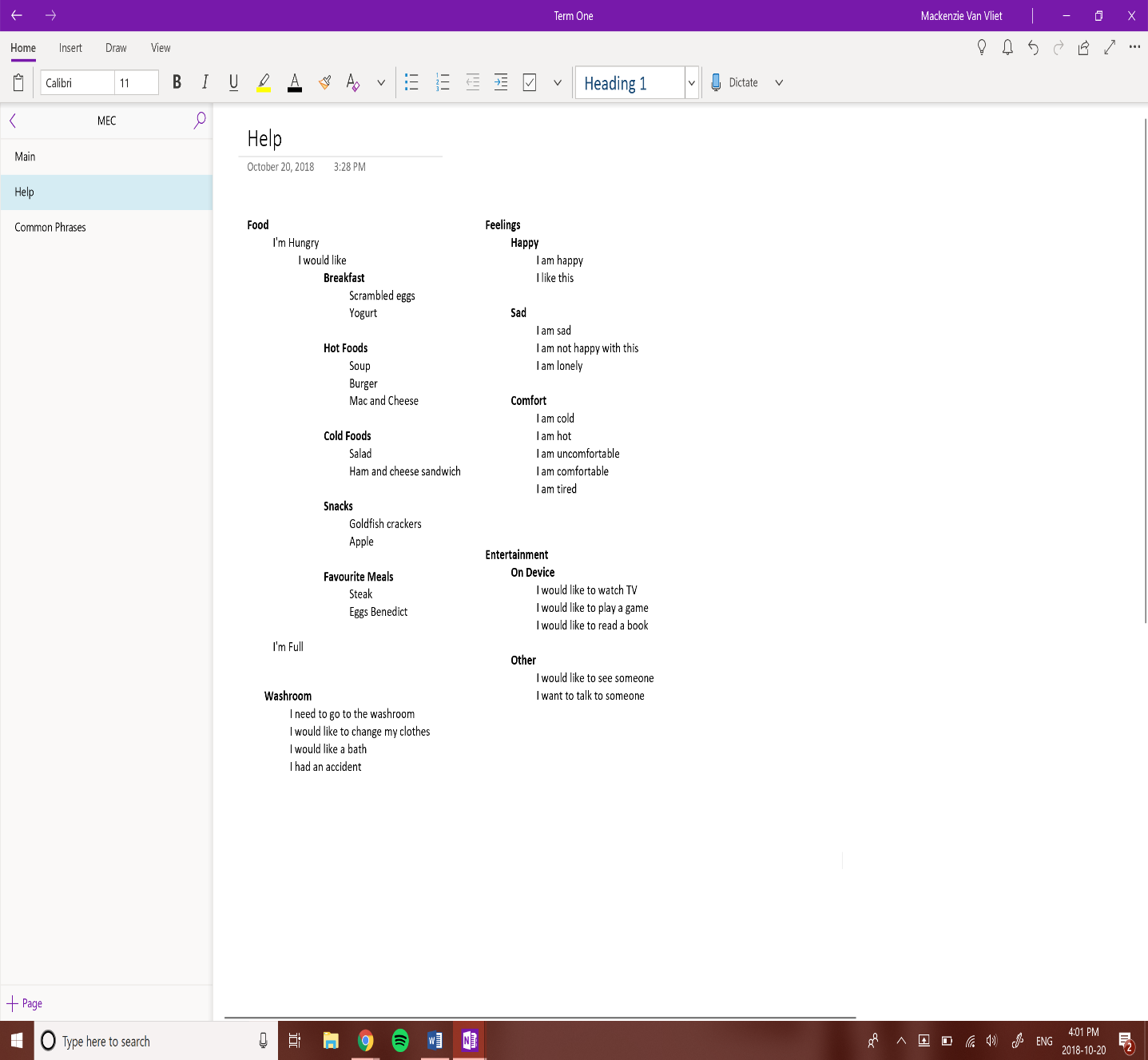
* ACAT created by Intel and Stephan Hawking
* SwiftKey’s predictive text
* Life Alert

**Our Design**

* Large font keyboard that has predictive text
* Text typed by Don appears above the keyboard when he types
* “Play” button to play text Don has typed out loud
* “Clear” button clears Don’s text
* All text that is played by Don is sent to an email account so those not in the room can hear Don
* Emergency button that acts as a Life Line
* Help section that prompts Don to select pre-programmed statements that indicated what Don needs assistance with
* Common phrases section that allows Don to quickly say his favourite phrases
* “Oh Yeah” button that says Don’s absolutely favourite saying
* Work with Don’s family and friends to find and install a voice that sounds like what Don would sound like
* Written in C# using Visual Studio

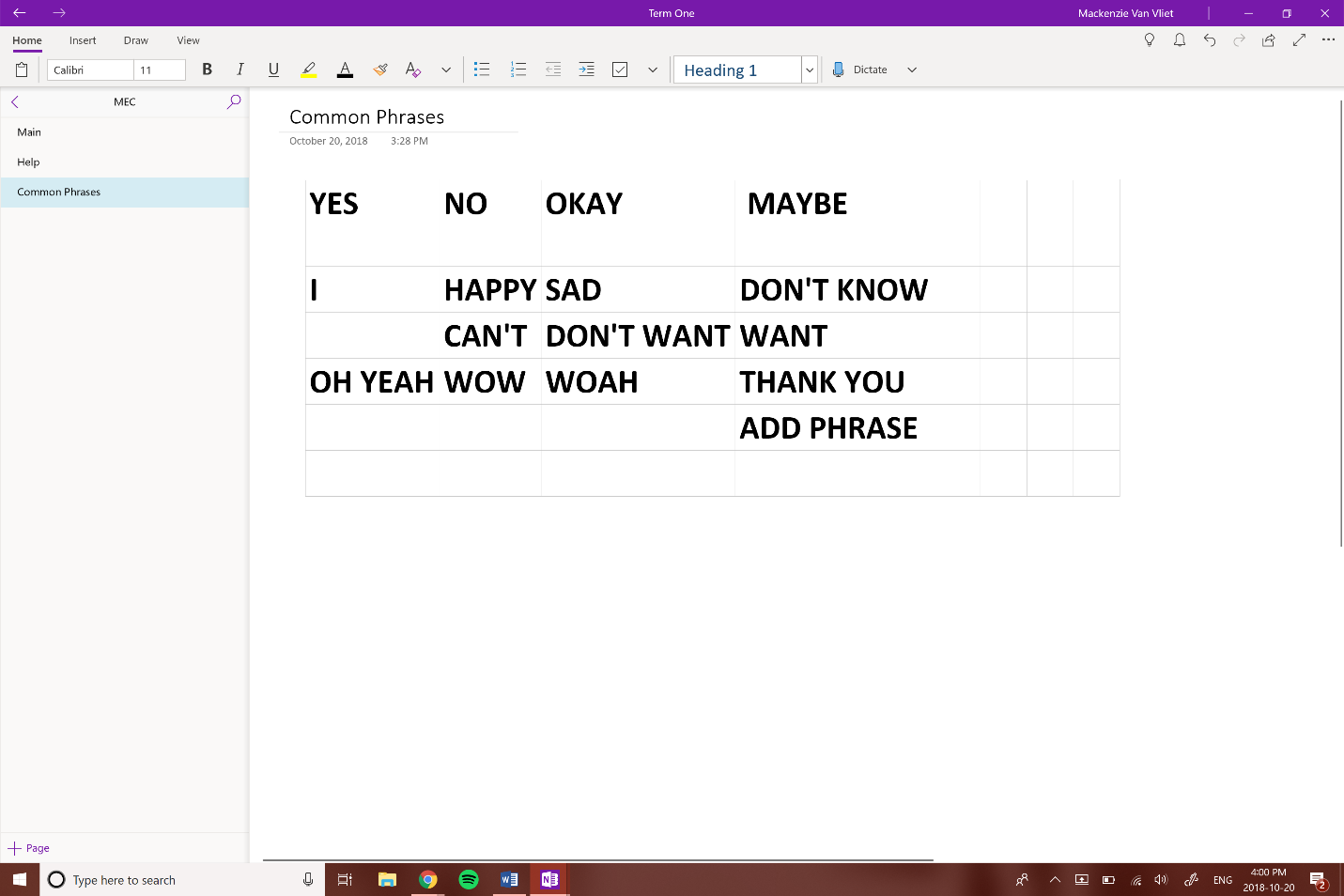
**Main Interface**





**Help Drop Down Layout**

**Common Phrases Interface**



**Components of Design**

Keyboard Layout

* Large font QWERTY layout with numbers on top
* All capital letters
* Period, comma, space, clear and back button

Text Display

* Text display is just for Don to see what he typed before he ‘speaks”
* People Don are speaking to can either read the text in the text display or listen to what he says
* Can handle one line of speech
* Speak button is beside the text display so Don can review what he wants to say before he says it

//in View Model

public string DisplayedText

{

get { return displayedText; }

set

{

displayedText = value;

OnPropertyChanged("DisplayedText");

}

}

Predictive Text

* Default predictive text is: Yes, No, Okay
* Predicts what word you are typing while typing
* Predicts next word in sentence
* Trained the predictive text with text files containing common English sentences

Text to Speech

* Uses Speech Synthesis that is a library available in Windows 10
* “Speaks” when the speak button is hit

//in Tools

public class SpeechSynthesizerManager

{

private SpeechSynthesizer synthesizer;

public SpeechSynthesizerManager()

{

synthesizer = new SpeechSynthesizer();

synthesizer.SetOutputToDefaultAudioDevice();

}

public void Speak(string text)

{

if (!string.IsNullOrWhiteSpace(text))

{

lock (synthesizer)

{

Prompt speech = new Prompt(text.Trim());

synthesizer.Speak(speech);

}

}

}

}

//in View Model

Task.Run(() => synthesizerManager.Speak(“Text you want to speak”));

Email Notifications

* Every time “Email” is pressed an email is sent out to a specific “Don’s Speech” email;
* [don.L.speaks@gmail.com](mailto:don.L.speaks@gmail.com), password: DonSpeaks123
* This is useful for when Don wants to communicate with people in other rooms

//in Tools

public class MailSender

{

private const string SMTP\_CLIENT\_NAME = "smtp.gmail.com";

private const int SMTP\_PORT = 587;

private const string SENDER\_MAIL\_ADDRESS = "don.l.speaks@gmail.com";

private const string PASSWORD = "DonSpeaks123";

public void SendMail(string content)

{

try

{

using (MailMessage mail = new MailMessage())

{

mail.From = new MailAddress(SENDER\_MAIL\_ADDRESS);

mail.To.Add(SENDER\_MAIL\_ADDRESS);

mail.Subject = "Don speaks";

mail.Body = content;

mail.IsBodyHtml = true;

using (SmtpClient smtp = new SmtpClient(SMTP\_CLIENT\_NAME, SMTP\_PORT))

{

smtp.Credentials = new NetworkCredential(SENDER\_MAIL\_ADDRESS, PASSWORD);

smtp.EnableSsl = true;

smtp.Send(mail);

}

}

}

catch(Exception e)

{

MessageBox.Show(e.Message);

}

}

}

//in View Model

Public void SendDisplayedTextAsEmail()

{

mailSender.SendMail(DisplayedText);

}

Voice

* Uses computers built in voice
* Can download appropriate voice that works for Don
* See Text to Speech for main code

Help Button

* Brings up Help menu that allows Don to choose what he needs help with
* Help phrases can be added to meet Don’s needs
* Is full of dropdown lists
* We did not have enough time to get to this function

Common Phrases Button

* Brings up Common Phrases menu full of Don’s favourite, common phrases
* Phrases can be added to this menu by Don
* The advantage of this is that some longer phrases it would be easier to punch out with this than type it all out

Emergency Button

* Plays alarm at full volume
* Google Hangout calls the email address
* Works like Life Alert
* We did not have enough time to get to this function

Comments and Code

* Please see comments on the actual program code for more detailed information on how the code runs