In this case study the Word Guess application will be created.

The specification for the application is:

A Word Guess application that allows a user to guess the letters in a secret word. NOODLE is the secret word that is represented as a row of dashes on the form, with one dash for each letter. The user is promoted for a letter automatically and can enter a lowercase letter or an uppercase letter as a guess. If the letter is in the secret word, the appropriate dash(es) on the form is replaced by the letter guessed. The user may try to guess the word at any time. If the secret word is guessed, the word is displayed on the form along with the number of guesses made. If the wrong work is guessed, the user loses.

The interface design should have a label with a font sized large enough to show the secret word prominently on the form. Since the user is to be prompted automatically, an input box will be used, so there is no need to a text box. A button allows the user to start the game.

Play

Game

The code design starts with an algorithm

1. Display the same number of dashes in the secret word.
2. Prompt the user for a letter, but also allow the user to enter a flag if ready to guess the entire word.
3. Increment a guess counter
4. If a letter was entered determine if the letter is in the secret word and then display the letter entered in the proper position on the form.
5. If the flag was entered, prompt the user for the entire word.
6. Repeat step 1 until the word has been guessed or the user gives up by clicking Cancel in the input box or leaves he input box empty.

**Note** in the code that the string of dashes is created by padding an empty string with the same number of dashes as characters in the secret word. This allows more flexibility in the program because creating a new secret word means just changing one assignment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **OBJECT** | **NAME** | **TEXT** | **TEXT ALIGN** | **FONT** |
| Form1 |  | Word Guess |  |  |
| Label1 | lblSecretWord | *empty* | Middle Center | Size 36 |
| Button1 | btnPlayGame | Play Game |  |  |

Code:

Private Sub btnPlayGame\_Click(ByVal sender As Object, \_

ByVal e As System.EventArgs) Handles btnPlayGame.Click

Const SECRET\_WORD As String = "NOODLE"

Const FLAG As Char = "!"

Const GUESS\_PROMPT As String = "Enter a letter or " & FLAG & " to guess word:"

Dim numGuesses As Integer = 0

Dim letterGuess As Char

Dim wordGuess As String

Dim tempWord As String

Dim endGame As Boolean

'Set number of dashes as letters in SECRET\_WORD

Dim wordGuessedSoFar As String = ""

Dim length As Integer = SECRET\_WORD.Length

wordGuessedSoFar = wordGuessedSoFar.PadLeft(length, "-")

Me.lblSecretWord.Text = wordGuessedSoFar 'initialize game

'Get first guess

Dim tempLetterGuess = InputBox(GUESS\_PROMPT, Me.Text)

'Test data entered

If tempLetterGuess = Nothing Then

endGame = True

Else

letterGuess = tempLetterGuess

End If

Do While letterGuess <> FLAG And wordGuessedSoFar <> SECRET\_WORD And Not endGame

numGuesses += 1

For letterPos As Integer = 0 To SECRET\_WORD.Length - 1

If SECRET\_WORD.Chars(letterPos) = Char.ToUpper(letterGuess) Then

'Remove dash at position of letter guessed

tempWord = wordGuessedSoFar.Remove(letterPos, 1)

'Insert guessed letter

wordGuessedSoFar = tempWord.Insert(letterPos, Char.ToUpper(letterGuess))

'Update interface

Me.lblSecretWord.Text = wordGuessedSoFar

End If

Next letterPos

'Get next letter if word hasen't been guessed

If wordGuessedSoFar <> SECRET\_WORD Then

'Get user guess

tempLetterGuess = InputBox(GUESS\_PROMPT, Me.Text)

'Test data entered

If tempLetterGuess = "" Then

endGame = True

Else

letterGuess = tempLetterGuess

End If

End If

Loop

If wordGuessedSoFar = SECRET\_WORD Then

MessageBox.Show("You guessed it in " & numGuesses & " guesses!")

ElseIf letterGuess = FLAG Then

wordGuess = InputBox("Enter a word: ", Me.Text)

If wordGuess.ToUpper = SECRET\_WORD Then

MessageBox.Show("You guessed it in " & numGuesses & " guesses!")

Me.lblSecretWord.Text = SECRET\_WORD

Else

MessageBox.Show("Sorry you lose.")

End If

Else

MessageBox.Show("Game over.")

End If

lblNumPoints.Text = "You have: " & " points!" '& numPoints

End Sub

End Class