

## HANGMAN SPELLING TEST

Assessment 4



DECEMBER 8, 2023
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#### Requirements

- The game and word content must be appropriate for students of upper primary school age (8-10)
- An alternative to the traditional hangman should be considered.
- The game is for a single player only.
- The player must be informed whether they have won or not.
- Each time a letter has been chosen, you should not be able to choose it again.
- The player should get no more than 10 chances to guess the word correctly

#### Stepwise refinement

- 1. The computer is given a list of spelling words to choose from
  - a. The computer randomly chooses a word from the list:
     [addition, breath, central, decorator, earthquake, fraction, guess, ignore, judge, kept, ledge, mention, narrate, often, palm, royal, shear, trouble, understand, vocal, wander]
  - b. The computer stores the word
- 2. The game will begin for the user
- 3. The user is met with a screen containing:
  - a. The alterative hangman design (Daisy flower hangman)
  - b. The computer will output the number of characters in the randomly generated word
  - c. An empty section, titled, 'Incorrect Guesses'
- 4. The user is told that they only have 10 chances to guess the word correctly and to only use the characters between a-z
  - a. While the number of guesses is less than 10 and the user has not won:
  - b. The user will enter a character, once
  - c. That input character will be compared with all the characters in the random word
  - d. If the letter that the user has inputted is in the random word
    - i. The alternative hangman design is remained the same
    - ii. The associated placeholder character is replaced with the input guess
    - iii. The 'Incorrect Guesses' section remains the same
    - iv. The user is no longer allowed to use the character
  - e. If the letter the user has inputted is not in the random word
    - i. The user loses a chance
      - 1. The alternative hangman design 'loses a limb' (A petal falls off)
    - ii. The associated placeholder character remains the same
    - iii. The input character is stored and displayed in the 'Incorrect Guesses' section
    - iv. The user is no longer able to use the character again
- 5. If the random word is guessed correctly
  - a. Output a message stating that the user has won the game
  - b. Print the amount of guesses it took for the user to guess the word correctly
- 6. If the number of guesses is more than 10
  - a. Display the final stage of the alternative hangman design (dead flower head)
  - b. Output a message that states the user has lost the game
  - c. Print the random word

#### Structure diagram Hangman Game Player loses all their Computer selects a Player guesses a Player guesses the word letter word chances The computer user is shown final if number of guesses The user is told they randomly chooses a stage of alternative is less than 10 have won the game word from a list hangman design the user is told how user is told they have computer stores the user inputs their many guesses is took chosen word guess lost the game to guess the word if the users guess is if the users guess is if the user does not user is told the word in the word not in the word input a valid option they are guessing The user loses a the placeholder "Invalid input - enter a chance shown using charcter is replaced letter" the alternative with guessed letter hangman design the guessed letter is user can no longer stored and displayed user inputs their able to use guessed in the 'Incorrected guess letter guesses section'

### Pseudocode:

(hangman base)

IMPORT random

SPELLINGWORDS = [addition, breath, central, decorator, earthquake, fraction, guess, ignore, judge, kept, ledge, mention, narrate, often, palm, royal, shear, trouble, understand, vocal, wander]

```
Index = RANDINT (0, LEN(SPELLINGWORDS)-1)
Word = SPELLINGWORDS[Index]
Correct = []
Incorrect = []
DEF has_won():
Won = TRUE
FOR chr in word:
IF chr not in correct:
won = FALSE
ENDIF
ENDFOR LOOP
RETURN won
WHILE LEN(incorrect) < 10 AND not has_won():
       FOR chr in word:
               IF chr in correct:
                      PRINT(chr, end=" ")
               ELSE:
                      PRINT ("_", end=" ")
               ENDIF
       ENDFOR LOOP
       PRINT("Incorrect:"," " ".join(incorrect))
```

```
PRINT("You only have ", 10 -LEN(incorrect), "lives left")
        Guess = INPUT("Enter a guess: ")
        WHILE not LEN(guess) == 1 AND guess.isalpha():
               PRINT("Invalid guess – enter a single letter")
               Guess = INPUT("Enter a guess: ")
        ENDWHILE LOOP
        IF guess in word:
               IF guess not in correct:
                       Incorrect.append(guess)
               ENDIF
        ELSE:
IF guess not in incorrect:
incorrect.append(guess)
ENDIF
        ENDIF
ENDWHILE LOOP
IF has_won():
        PRINT("You've guessed the correct word and it only took", 10 – LEN(incorrect), "tries!!")
ELSE:
        PRINT("Out of tries, the word you were guessing was", word, "try again next time")
ENDIF
```

#### Code

```
# program: Hangman game.py
# author: Sarina Saiyed
# email: 2338323@students.carmel.ac.uk
# student number: 2338323
# You have been asked to work on the first episode of the game
# which is a modern take on the game of Hangman.
# The publisher has sent you some requirements:
   The game and word content must be appropriate for students of upper
primary school age (8-10)
   An alternative to the traditional hangman should be considered.
   The game is for a single player only.
#
   The player must be informed whether they have won or not.
   Each time a letter has been chosen, you should not be able to choose
it again.
   The player should get no more than 10 chances to guess the word
correctly.
# Design
# The computer is given a list of spelling words to choose from
# The computer randomly chooses a word from the list:
       [addition, breath, central, decorator, earthquake, fraction,
       guess, ignore, judge, kept, ledge, mention, narrate, often, palm,
       royal, shear, trouble, understand, vocal, wander]
# The computer stores the word
# The game will begin for the user
```

- # The user is met with a screen containing:
- # The alterative hangman design (Daisy flower hangman)
- # The computer will output the number of characters in the randomly generated word
- # An empty section, titled, 'Incorrect Guesses'
- # The user is told that they only have 10 chances to guess the word correctly and
- # to only use the characters between a z
- # While the number of guesses is less than 10 and the user has not won
- # The user will enter a character, once
- # That input character will be compared with all the characters in the random word
- # If the letter that the user has inputted is in the random word
- # The alternative hangman design is remained the same
- # The associated placeholder character is replaced with the input guess
- # The 'Incorrect Guesses' section remains the same
- # The user is no longer allowed to use the character
- # If the letter the user has inputted is not in the random word
- # The user loses a chance
- # The alternative hangman design 'loses a limb' (A petal falls off)
- # The associated placeholder character remains the same
- # The input character is stored and displayed in the 'Incorrect Guesses'
  section
- # The user is no longer able to use the character again
- # If the random word is guessed correctly
- # Output a message stating that the user has won the game
- # Print the amount of guesses it took for the user to guess the word correctly
- # If the number of guesses is > 10
- # Display the final stage of the alternative hangman design (dead flower head)
- # Output a message that states the user has lost the game
- # Print the random word

```
# Pseudocode
# IMPORT random
# SPELLINGWORDS = [addition, breath, central, decorator,
earthquake, fraction, guess, ignore, judge, kept, ledge, mention, narrate,
often, palm, royal, shear, trouble, understand, vocal, wander]
# Index = RANDINT (0, LEN(SPELLINGWORDS)-1)
# Word = SPELLINGWORDS[Index]
# Correct = []
# Incorrect = []
# DEF has won():
     Won = TRUE
#
#
     FOR chr in word:
           IF chr not in correct:
#
                won = FALSE
#
           ENDIF
     ENDFOR LOOP
#
     RETURN won
#
# WHILE LEN(incorrect) < 10 AND not has_won():</pre>
       FOR chr in word:
#
           IF chr in correct:
              PRINT(chr, end=" ")
#
           ELSE:
#
              PRINT ("_", end=" ")
#
           ENDIF
#
```

#

#

#

**ENDFOR LOOP** 

PRINT("Incorrect:"," " ".join(incorrect))

PRINT("You only have ", 10 -LEN(incorrect), "lives left")

```
#
       Guess = INPUT("Enter a guess: ")
       WHILE not LEN(guess) == 1 AND guess.isalpha():
#
          PRINT("Invalid guess - enter a single letter")
#
          Guess = INPUT("Enter a guess: ")
#
       ENDWHILE LOOP
#
#
       IF guess in word:
#
          IF guess not in correct:
              Correct.append(guess)
#
          ENDIF
#
       ELSE:
          IF guess not in Incorrect:
          Incorrect.append(guess)
         ENDIF
       ENDIF
# ENDWHILE LOOP
#
#
# IF has_won():
       PRINT("You've guessed the correct word and it only took", 10 -
LEN(incorrect), "tries !!")
# ELSE:
       PRINT("Out of tries, the word you were guessing was", word, "try
again next time")
#
# ENDIF
# Variables
# list SPELLINGWORDS
# int Index
# str Word
```

```
# list Incorrect
# int tries
# bool Won
# str Guess
# Functions
# display
# has won
# Main
import random # Imports the libriary that allows randomisation
SPELLINGWORDS =
['addition','breath','central','decorator','earthquake','fraction','guess'
,'ignore','judge','kept','ledge','mention','narrate','often','palm','royal
','shear','trouble','understand','vocal','wander']
#constant, list of spelling words
Index = random.randint(0, len(SPELLINGWORDS)-1) # choses a random number
between 0 and the last number of items in spelling words
Word = SPELLINGWORDS[Index] # uses the random number as a index and picks
a random word from list
Correct = [] # empty list to later on store the correct guesses of user
Incorrect = []# empty list to later store the incorrect guesses of user
tries = 10 # allows the user to see how many tries they have using the
flower visuals
```

# list Correct

def display(tries): # funtion that calls the stages of the hangman visuals
depending on how many times the user has

```
# incorrectly guessesd
stages = ["""
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print() # space

return stages[tries] # returns the certain visual depending on what number tries is on

```
def has_won(): # function that is carried out if player has guessed the
word
    Won = True #won is initally set to true
    for ch in Word: # for loop will check each character in the chosen
spelling word
        if ch not in Correct: #if that character is not in the list
Correct
            Won = False # set to false untill all characters are in the
list
    return Won # return won when all characters in list (won set to true)
while len(Incorrect) < 10 and not has_won(): # main game</pre>
    print("Let's play hangman !!") # while loop continues until length on
incorrect list exceeds 10 and if the user has won
    for ch in Word:
        if ch in Correct:
            print(ch, end=" ") #replaces _ with guessed character in the
word
        else: # end=' ' allows for a space after the characters
            print ("_", end=" ") #as the initial list for correct is empty
that characters in the word are replaced with _
    print(display(tries)) #displays which current life they are on shown
with flower and fallen petals
```

```
print("Incorrect:"," " .join(Incorrect)) # incorrect guesses are shown
here, joins the list in incorrect
    print("You only have ", 10 - len(Incorrect), ("lives left")) # give a
numeric visual of how many lives they have left
   Guess = input("Enter a guess: ").lower() # allows the user to input
their guess
   while not len(Guess) == 1 or not Guess.isalpha(): # whille loop, if
the guess is more than 1 character and is anything
                                                        #but a letter
       print("Invalid guess - enter a single letter") #outputs what they
did wrong
       Guess = input("Enter a guess: ").lower() # allows user to input
their guess again
       # loop will end when correct character is inputted
   if Guess in Word: # if the users guess is spelling word
        if Guess not in Correct: # only appends the guess if the guess
hasnt been used
           Correct.append(Guess) # adds the users guess into the correct
list
       else:
           print()
           print("== Dont repeat letters== ")
   else: # is the guess is not in the word
       if Guess not in Incorrect: # appends the list Incorrect is guess
is not in list
            Incorrect.append(Guess) # adds the users guess in to the
Incorrect list
           tries = tries - 1 #tries is decreased by one allowing the
visul display to change
       else:
```

```
print()
    print("== Dont repeat letters ==")

if has_won(): #when won = true
    print("You've guessed the correct word and it only took",
len(Incorrect)+len(Correct), "tries !!") # user is told they are won
    # and how many tries it took for them to guess the word
    print(Word)# the word without the spaces are printed for the user to see

else:
    print(display(0)) #displays index 0 showing a visual display that the user has lost and did not win the game
    print("Out of tries, the word you were guessing was","'" +Word+"'",
"try again next time") #tells user they have lost and what the word they were guessing is
```

#### Screenshots

```
# program: Hangman game.py
# author: Sarina Saiyed
# email: 2338323@students.carmel.ac.uk
# student number: 2338323
     You have been asked to work on the first episode of the game which is a modern take on the game of Hangman.
 # The publisher has sent you some requirements:
The game and word content must be appropriate for students of upper primary school age (8-10)
An alternative to the traditional hangman should be considered.
The game is for a single player only.
The player must be informed whether they have won or not.
Each time a letter has been chosen, whould not be able to choose it again.
The player should get no more than 10 chances to guess the word correctly.
 # If the letter the user has inputted is not in the random word
# The user loses a chance
# The alternative hangman design 'loses a limb' (A petal falls off)
# The associated placeholder character remains the same
# The input character is stored and displayed in the 'Incorrect Guesses' section
# The user is no longer able to use the character again
# If the random word is guessed correctly
# Output a message stating that the user has won the game
# Print the amount of guesses it took for the user to guess the word correctly
# If the number of guesses is > 10
# Display the final stage of the alternative hangman design (dead flower head)
# Output a message that states the user has lost the game
# Print the random word
```

```
#
# IMPORT random
  FSPELLINGWORDS = [addition, breath, central, decorator, earthquake, fraction, guess, ignore, judge, kept, ledge, mention, narrate, often, palm, royal, shear, trouble, unders
# Index = RANDINT (0, LEN(SPELLINGWORDS)-1) # Word = SPELLINGWORDS[Index] # Correct = [] # Incorrect = []
# Con:
# Incorrect -
# DEF has_won():
# Won = TRUE
# FOR chr in word:
# IF chr not in correct:
won = FALSE
             ENDIF
ENDFOR LOOP
RETURN won
   ELSE:
PRINT ("_", end=" ")
             ENDIF
ENDFOR LOOP
PRINT("Incorrect:"," " ".join(incorrect))
PRINT("You only have ", 10 -LEN(incorrect), "lives left")
Guess = IMPUT("Enter a guess: ")
WHILE not LEN(guess) == 1 AND guess.isalpha():
PRINT("Invalid guess - enter a single letter")
Guess = IMPUT("Enter a guess: ")
ENDWHILE LOOP
             IF guess in word:
    IF guess not in correct:
        Correct.append(guess)
    ENDIF
                   IF guess not in Incorrect:
    Incorrect.append(guess)
                   ENDIF
             ENDIF
# ENDWHILE LOOP
# IF has_won():
# PRINT("You've guessed the correct word and it only took", 10 — LEN(incorrect), "tries !!")
# ELSE:
             PRINT("Out of tries, the word you were guessing was", word, "try again next time")
```

```
# display
# has_won
import random # Imports the libriary that allows randomisation
SPELLINGWORDS = ['addition','breath','central','decorator','earthquake','fraction','guess','ignore','judge','kept','ledge','mention','narrate','often','palm','royal','shear', #constant, list of spelling words
Index = random.randint(0, len(SPELLINGWORDS)-1) # choses a random number between 0 and the last number of items in spelling words
Word = SPELLINGWORDS[Index] # uses the random number as a index and picks a random word from list
Correct = [] # empty list to later on store the correct guesses of user
Incorrect = []# empty list to later store the incorrect guesses of user
tries = 10 # allows the user to see how many tries they have using the flower visuals
def display(tries): # funtion that calls the stages of the hangman visuals depending on how many times the user has
    # incorrectly guessesd
    stages = ["""
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return stages[tries] # returns the certain visual depending on what number tries is on

```
def max_wow(); # function that is carried out if player has guessed the word

who m = True # out is initially set to true

for ch in Word; # for loop will check each character in the chosen spelling word

if ch on in Correct; # 18 and not has_wor(); # main_gue

return Non # return wow sheen all characters in list (wom set to true)

white len(Incorrect) < 18 and not has_wor(); # main_gue

print("let's play hangman !!") # while loop continues until length on incorrect list exceeds 18 and if the user has won

for ch in Word:

if ch in Correct:

if ch in Correct:

if ch in Correct:

print("main_guess") # set initial list for correct is empty that characters in the word are replaced with_

print(display(tries)) # displays which current life they are on shown with flower and fallen petals

print("main_guess") # lenfincorrect), "lives left") # give a numeric visual of how many lives they have left

guessed # False

Guess = input("Enter guess: ").lower() # allows the user of input they guess

while not indivers) = 1 or not duess.isa[Pablit] while loop if the puess is more than 1 character and is anything

guessed # false

Guess = input("Enter guess: ").lower() # allows the user of input they guess

while not indivers) = 1 or not duess.isa[Pablit] while loop if the puess is more than 1 character and is anything

guessed # false

Guess = input("Enter guess: ").lower() # allows the user of input their guess

while not indivers) = 1 or not duess.isa[Pablit] while loop if the puess is more than 1 character and is anything

guessed # indiversed # in the word

if Guess in Nord: # if the users guess is spelling word

if Guess in Nord: # if the users guess is spelling word

if Guess in Incorrect: # only appends the guess if the guess hash been used

Correct.append(guess) # adds the users guess into the correct list

Incorrect.append(guess) # adds the users guess into the incorrect list

Incorrect.append(guess) # adds the users guess into the incorrect list

Incorrect.append(guess) # adds the users guess into the incorrect list
```

#### **Testing**

#### Start screen

Incorrect:
You only have 10 lives left
Enter a guess:

Valid input

# Let's play hangman !! \_ \_ a \_ Incorrect: You only have 10 lives left Enter a guess: | Input repeat (capital)

```
Incorrect: a
You only have 9 lives left
Enter a guess: A
== Dont repeat letters == Let's play hangman !!
```

Incorrect: a You only have 9 lives left Enter a guess:

#### Input repeat

Incorrect: a
You only have 9 lives left
Enter a guess:

#### Correct input full play

```
Incorrect:
You only have 10 lives left
Enter a guess: a
Let's play hangman !!

Incorrect:
You only have 10 lives left
Enter a guess: a
Let's play hangman !!

Incorrect:
Incorre
```

```
Incorrect:
You only have 10 lives left
Enter a guess: e
Let's play hangman !!
_ e _ _ a _
     Incorrect:
You only have 10 lives left
Enter a guess: c
Let's play hangman !!
c e _ _ a _
    1
Incorrect:
You only have 10 lives left
Enter a guess: n
Let's play hangman !!
c e n _ _ a _
```

#### Incorrect input full play

Let's play hangman !!

```
Incorrect: i z x
You only have 7 lives left
Enter a guess: v
Let's play hangman !!
     Incorrect: i z x v
You only have 6 lives left
Enter a guess: q
Let's play hangman !!
```

```
Incorrect: i z x v q
You only have 5 lives left
Enter a guess: u
Let's play hangman !!
Incorrect: i z x v q u
You only have 4 lives left
Enter a guess: h
Let's play hangman !!
----:
     Incorrect: i z x v q u h
You only have 3 lives left
Enter a guess: b
Let's play hangman !!
        Incorrect: i z x v q u h b
You only have 2 lives left
Enter a guess: w
Let's play hangman !!
```

:=++=--=++=.

Invalid input (number, symbol, space, 2 invalid characters)

```
Incorrect:
You only have 10 lives left
Enter a guess: 1
Invalid guess - enter a single letter
Enter a guess: /
Invalid guess - enter a single letter
Enter a guess:
Invalid guess - enter a single letter
Enter a guess: 1/
Invalid guess - enter a single letter
Enter a guess: |
```

```
Let's play hangman !!
```

\_ \_ \_ \_ \_ \_ \_ \_

#### Incorrect:

Incorrect:
You only have 10 lives left
Enter a guess: ab
Invalid guess - enter a single letter
Enter a guess: abc
Invalid guess - enter a single letter
Enter a guess: a