# Homework 3 Functions Answers

**1.** Complete the paragraph, using the words provided.

[call] [decompose] [function] [return ] [subroutine]

It can be helpful to have a block of code that is separate to the main program – this is called a subroutine. It can often be helpful to decompose a problem by identifying the small-medium sized tasks and separating them out in order to tackle them individually. The main program will then call each one as and when it needs to.

A function is a subroutine that may or may not return a value to the rest of the program. [5]

2. Study the program and then answer the questions below it.

#Program L3 HW3 Guess number

import random

def getGuess():

guess = 0

while guess < 1 or guess > 100:

guess = int(input("Enter a guess between 1 and 100: "))

return guess

def displayRules():

print("This is a guessing game.")

print("You have to guess the number between 1 and 100 \

chosen by the computer")

def playGame(target):

guessedNumber = False

guess = getGuess()

while guess != target:

if guess > target:

guess = int(input("Too high - guess lower: "))

elif guess < target:

guess = int(input("Too low - guess higher: "))

else:

guessedNumber = True

print("\nThat's correct, well done!")

return guessedNumber

#main

choice = "0"

while choice != "3":

print("\nMain Menu")

print("1. Display the rules")

print("2. Play the game")

print("3. Quit")

choice = input("Choose an option: ")

if choice == "1":

displayRules()

elif choice == "2":

guessedNumber = playGame(random.randint(1,100))

elif choice !="3":

choice = input("Invalid choice - must be between 1 and 3: ")

input("Goodbye ... press Enter to Quit program ")

(a) Identify a call statement which passes a parameter to a function. [1]

guessedNumber = playGame(random.randint(1,100))

(b) Identify a call statement which does not pass a parameter, but which accepts a   
return value from the function. [1]

guess = getGuess()

(c) Explain, in general terms, what the value of the parameter **target** in the function **playGame()** is and how it is assigned this value. [3]

It is a random number between 1 and 100

assigned by calling the function randint() in the main program

and passed as a parameter to the function.

This is the number that the user has to guess.

**3.** Write an explanation of how subroutines can be used by programmers and how this can help the development process.

You will be assessed on your use of written language and technical terms. [5]

**Suggested content**

* Subroutines are independent blocks of code
* Subroutines can be called from within the program
* Procedures are subroutines that don’t return a value
* Functions are subroutines that do return a value
* It can be easier to solve several small problems than one large one
* A good starting point is often to decompose a problem into smaller tasks
* Each task can be separated from the program into a subroutine
* Each subroutine can be coded independently
* This allows the programmer to focus on one small problem at a time
* It can prevent a programmer from being overwhelmed by a large problem
* It can allow teams of programmers to work on different sections of the program independently
* Subroutines can be re-used, avoiding the need to copy and paste code
* One change to the code in a subroutine will change it throughout the program – avoiding errors where the programmer might have missed one copy of the code

**4-5 Marks**

A clear, and well argued discussion that includes many of the points above.  
Spelling, punctuation and grammar are clear with few, if any, errors.  
Good use of clear, technical terminology

**2-3 Marks**

A reasonable discussion that includes some of the points above.  
Spelling, punctuation and grammar may include errors, though the meaning is still clear.  
Some use of technical terms – largely accurate.

**0-1 Marks**

A brief or unclear attempt that mentions only one or two of the points above.  
Spelling, punctuation and grammar errors are obtrusive.  
No use of technical terms, or their use is consistently inaccurate.

[Total 15 marks]