# 1)

## Code

from random import randrange  
  
CODE\_LENGTH = 4  
MAX\_DIGIT\_VALUE = 5  
MIN\_DIGIT\_VALUE = 0  
  
def get\_code() -> list:  
 """Return a random code as a list of integers"""  
 rand\_digits = []  
 for \_ in range(0, CODE\_LENGTH):  
 rand\_digits.append(randrange(MIN\_DIGIT\_VALUE, MAX\_DIGIT\_VALUE + 1))  
  
 return rand\_digits

## Output

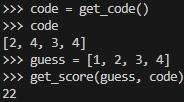


# 2)

## Code

CODE\_LENGTH = 4  
MAX\_DIGIT\_VALUE = 5  
MIN\_DIGIT\_VALUE = 0  
  
def get\_score(guess: list, code: list) -> int:  
 """  
 Calculate the score based on the guess and code.  
  
 :param list guess: a list containing the 4 digit guess  
 :param list code: a list containing the 4 digit code  
  
 :return int: the calculated score  
  
 """  
 score = 0  
 non\_matching\_digits = []  
  
 for index in range(0, CODE\_LENGTH):  
  
 guess\_digit = guess[index]  
 code\_digit = code[index]  
  
 # Add 10 points for every matching digit  
 if guess\_digit == code\_digit:  
 score += 10  
  
 # Save the code's non matching digits  
 else:  
 non\_matching\_digits.append(code\_digit)  
  
 # Add a point for every non-matching   
 # code digit that exists within the guess  
 for digit in non\_matching\_digits:  
 if digit in guess:  
 score += 1  
   
 return score

## Output



# 3)

## Code

CODE\_LENGTH = 4  
MAX\_DIGIT\_VALUE = 5  
MIN\_DIGIT\_VALUE = 0  
MAX\_SCORE = 40  
  
def main():  
 """Master-Mind Program"""  
 score = 0  
 guess\_num = 1  
 code = get\_code()  
 while score < MAX\_SCORE:  
 try:  
 user\_input = input(  
 "\nGuess number: {}\  
 \nEnter a four digit guess: ".format(guess\_num)  
 )  
  
 # Check the input  
 invalid\_input = False  
 if ((len(user\_input) != CODE\_LENGTH) or   
 (not user\_input.isdigit())):  
 invalid\_input = True  
 else:  
 for digit in user\_input:  
 invalid\_input = (not (MIN\_DIGIT\_VALUE <=   
 int(digit) <= MAX\_DIGIT\_VALUE))  
  
 if invalid\_input:  
 raise ValueError(  
 "Invalid input: '{}', must be a {} digit code ".format(  
 user\_input,   
 CODE\_LENGTH,   
 )  
 +  
 "with digits between {} and {} inclusive".format(  
 MIN\_DIGIT\_VALUE,   
 MAX\_DIGIT\_VALUE  
 )  
 )  
   
 guess = [int(digit) for digit in user\_input]  
 score = get\_score(guess, code)  
 guess\_num += 1  
 print("Your score: {}".format(score))  
  
 except ValueError as error:  
 print(error)  
   
 print("You guessed correctly!")

## Output

