NAME:

NUMBER:

Date: 18.11.2021, Thursday
Time: 09:00 (90 minutes)
Place: D1, D2, D4
Lecturer: İrem Ülkü

ANKARA UNIVERSITY, COMPUTER ENGINEERING DEPARTMENT

COM1001: Computer Programming I (Fall 2021-22) - MIDTERM EXAM (110P)

(10P) QUESTION 1:

A bookseller awards points to its customers based on the number of books purchased each month. The points are awarded as follows:

- If a customer purchases 0 books, he or she earns 0 points.
- If a customer purchases 2 books, he or she earns 5 points.
- If a customer purchases 4 books, he or she earns 15 points.
- If a customer purchases 6 books, he or she earns 30 points.
- If a customer purchases 8 or more books, he or she earns 60 points.

Write a program that asks the user to enter the number of books that he or she has purchased this month, then displays the number of points awarded.

RUN:

Enter the number of books purchased: **X**

OUTPUT:

You have purchased **Y** books.

This earns you **Z** points.

```
# Local variables
number = 0
points = 0
# Get the number of books purchased from the user.
number = int(input('Enter the number of books purchased: '))
# Determine points earned.
if number == 2:
    points = 5
elif number == 4:
    points = 15
elif number == 6:
    points = 30
elif number >= 8:
    points = 60
else:
    points = 0
# Display the number of points earned.
print('You have purchased', number, 'books.')
print('This earns you', points, 'points.')
```

(20P) QUESTION 2:

Below a program is given that uses nested loops to draw this pattern:

```
##
# #
#  #
#   #
#    #
#     #
#      #
```

Fill the blank spaces **1** and **2** in this code.

```
character = '#'

numRows = 7

space = ' '


for row in range(numRows):
    for col in [ 1 ]:
        if col == 0 or [ 2 ]:
            print(character, end='')
        else:
            print (space, end='')
    print()
```

```
character = '#'
numRows = 7     # The number of rows
space = ' '     # The space character

# Iterate over the rows.
for row in range(numRows):
    # Each row includes 2 more columns than the row number.
    for col in range(row + 2):
        # Print the symbol in the first and last column.
        if col == 0 or col == row + 1:
            print(character, end='')
        # Add spaces between symbols.
        else:
            print (space, end='')
    # Go to the next row.
    print()
```

(20P) QUESTION 3:

A prime number is a number that is only evenly divisible by itself and 1. For example, the number 5 is prime because it can only be evenly divided by 1 and 5. The number 6, however, is not prime because it can be divided evenly by 1, 2, 3, and 6.

Below program displays all of the prime numbers from 1 to 100. This program has **3 errors**, please **find and correct** these 3 errors.

```
def main():
    totalNumbers = 100
    for number in len(1, totalNumbers + 1):
        if is_prime(number):
            print (number, '\t', 'prime')
        else:
            print (number, '\t', 'not prime')
def is_prime(number):
    half = int(number / 2)
    status = True

    for count in range(2, half + 1):
        if number % count = 0:
            status = False
    return count
main()
```

```
def main():
    totalNumbers = 100
    for number in range(1, totalNumbers + 1):
        if is_prime(number):
            print (number, '\t', 'prime')
        else:
            print (number, '\t', 'not prime')

def is_prime(number):
    half = int(number / 2)
    status = True
    for count in range(2, half + 1):
        if number % count == 0:
            status = False
    return status
main()
```

(20P) QUESTION 4:

Write a program that asks the user to enter a series of 20 numbers. The program should **store the numbers in a list** then display the following data:

• The lowest number in the list

• The highest number in the list

• The total of the numbers in the list

• The average of the numbers in the list

RUN:

Enter a number: $\mathbf{X^1}$

.
.
.

Enter a number: $\mathbf{X^{20}}$

OUTPUT:

Low: **Y**

High: **Z**

Total: **W**

Average: **A**

```
def main():
    number_list = []
    low = 0.0
    high = 0.0
    total = 0.0
    average = 0.0
    number = 0

    for i in range(20):
        number = float(input('Enter a number: '))
        number_list.append(number)

    low = min(number_list)
    high = max(number_list)
    total = sum(number_list)
    average = total / 20.0

    print ('Low:', low)
    print ('High:', high)
    print ('Total:', format(total, ',.2f'))
    print ('Average:', format(average, ',.2f'))

main()
```

(20P) QUESTION 5:

GirlNames.txt file contains a list of the 200 most popular names given to girls from the year 2000 through 2021.
Below program reads the content of the file into a list. The user will enter a girl's name, and the application will display a message indicating whether the name was among the most popular. Fill the blank spaces **1, 2, 3 and 4** in this code.

```
def main():
    girl = ""
    # Open the file for reading
    girl_input = [ 1 ]
    # Read all the lines in the file into a list.
    popular_girls = [ 2 ]
    for i in range(len(popular_girls)):
        popular_girls[i] = [ 3 ].rstrip('\n')
    girl = input("Enter a girl's name, or N if you do not wish to enter a girl's name: ")
    if girl=='N':
        print("You chose not to enter a girl's name.")
    [ 4 ] girl in popular_girls:
        print(girl, "is one of the most popular girl's names.")
    else:
        print(girl, "is not one of the most popular girl's names.")
main()
```

```
def main():
    girl = ""
    # Open the file for reading
    girl_input = open('GirlNames.txt', 'r')

    # Read all the lines in the file into a list.
    popular_girls = girl_input.readlines()

    for i in range(len(popular_girls)):
        popular_girls[i] = popular_girls[i].rstrip('\n')

    girl = input("Enter a girl's name, or N if you do not wish to enter a girl's name: ")
    if girl=='N':
        print("You chose not to enter a girl's name.")
    elif girl in popular_girls:
        print(girl, "is one of the most popular girl's names.")
    else:
        print(girl, "is not one of the most popular girl's names.")
main()
```

(20P) QUESTION 6:

The following program requests a blood pressure value between 90 through 200 and then displays the risk and treatment for that patient. Suppose that **RisksTreatments.txt** file is in csv format and at each line first item indicates the risk and the second item indicates the treatment (these items are separated by a comma ","). Fill the blank spaces **1, 2, 3, 4** and **5** in this code.

```
incorrect = True
while [ 1 ] :
    bpressure = int(input("Enter your blood pressure value between 90 and 200: "))
    if (bpressure >= 90) and (bpressure <= 200):
        [ 2 ]
        infile = open("RisksTreatments.txt", 'r')
        allvalues = [line.rstrip() [ 3 ] ]
        infile.close()
        bpvalue = allvalues [bpressure - 90]
        data = bpvalue . [ 4 ]
        print("Your risk is:", data[0])
        print("Possible treatment is:", [ 5 ] )
    else:
        print("Blood pressure must be between 90 and 200.\n")
        incorrect = True
```

```
incorrect = True
while incorrect:
    bpressure = int(input("Enter your blood pressure value between 90 and 200: "))
    if (bpressure >= 90) and (bpressure <= 200):
        incorrect = False
        infile = open("RisksTreatments.txt", 'r')
        allvalues = [line.rstrip() for line in infile]
        infile.close()
        bpvalue = allvalues [bpressure - 90]
        data = bpvalue.split(',')
        print("Your risk is:", data[0])
        print("Possible treatment is:", data[1])
    else:
        print("Blood pressure must be between 90 and 200.\n")
        incorrect = True
```

GOOD LUCK ☺