

Problem Sets - Working Solutions

Problem Set 1 - Programming Basics

Less Challenging Questions

Question 1

Create a program that reads a duration from the user as a number of days, hours, minutes and seconds. Compute and display the total number of seconds represented by this duration.

```
In [1]: # Your code here
```

Question 2

Write a program that allows the user to enter values for the height and length of the base of a triangle. The program should calculate the area of the triangle and display the answer.

```
In [2]: # Your code here
```

Question 3

An online retailer sells two products: widgets and gizmos. Each widget weighs 75 grams. Each gizmo weighs 112 grams. Write a program that reads the number of widgets and the number of gizmos in an order from the user. Then your program should compute and display the total weight of the order.

```
In [3]: # Your code here
```

Median Questions

Question 1

In this exercise , you will create a program that begins by reading a measurement in feet from the user. Then your program should display the equivalent distance in inches, yards and miles. Use the Internet to look up the necessary conversion factors if you don't know them.

```
In [4]: # Your code here
```

Question 2

The volume of a cylinder can be computed by multiplying the area of its circular base by its height. Write a program that reads the radius of the cylinder, along with its height, from the user and computes its volume. Display the result rounded to one decimal place.

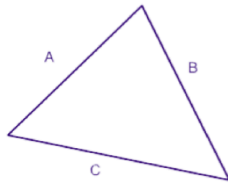
In [4]:

Question 3

Create a program that computes the area of a triangle using the length of the sides. The formula is shown below.

Heron's Formula

$$S = \frac{A + B + C}{2}$$



$$\text{Area} = \sqrt{S(S - A)(S - B)(S - C)}$$

The user should type in the lengths of the sides and the program should display the area as part of a sensible sentence.

In [5]:

```
# Your code here
```

Question 4

Write a program that begins by reading the radius, r , from the user. The program should compute and display the area of the circle with radius r and the volume of a sphere with radius r . Use the **pi** constant in the **math** module in your calculations.

You will need to look up and learn about modules in Python.

In [6]:

```
# Your code here
```

More Challenging Questions

Question 1

Develop a program that reads a four digit integer from the user and displays the sum of the digits in the number. For example, if the user enters 3141 then your program should display $3 + 1 + 4 + 1 = 9$.

In [7]:

```
# Your code here
```

Question 2

When the wind blows in cold weather, the air feels even colder than it actually is because of the movement of the air increases the rate of cooling for warm objects, like people. This effect is known as wind chill.

Carry out some research on the formula used to calculate wind chill. Use this formula to write a program that begins by reading the air temperature and wind speed from the user. The program should calculate and display in a meaningful way the wind chill index rounded to the closest integer.

In [8]: `# Your code here`

Question 3

Create a program that determines how quickly an object is travelling when it hits the ground. The user will enter the height from which the object is dropped in meters (m). Because the object is dropped its initial speed is 0 m/s. Assume that the acceleration due to gravity is 9.8 m/s². You will need to research the formula and then calculate the final speed and display the answer.

In [8]:

Question 4

Create a program that allows the user to enter the latitude and longitude of two points on the Earth in degrees. Your program should display the distance between the points , following the surface of the Earth , in kilometres.

In [9]: `# Your code here`

Problem Set 2 - Programming Basics (cont.)

Less Challenging Questions

Question 1

Design and create a Python program that takes a single integer as input. If the input is less than 50 adds 10 and displays the result raised to the power of 4, otherwise simply displays the input raised to the power of 4.



```
main.py  Files
1  userInput1 = int(input("Type in an
    integer"))
2  if userInput1 < 50:
3      print((userInput1+10)**4)
4  else:
5      print(userInput1**4)
```

In [2]:

```
# Your code here
```

Question 2

Design and create a Python program that asks the users age. If their age is greater than 11 then display the message "You are probably at secondary school". If the age is greater than 18 then display the message "You are not at secondary school". Also display this message if they are less than 11.

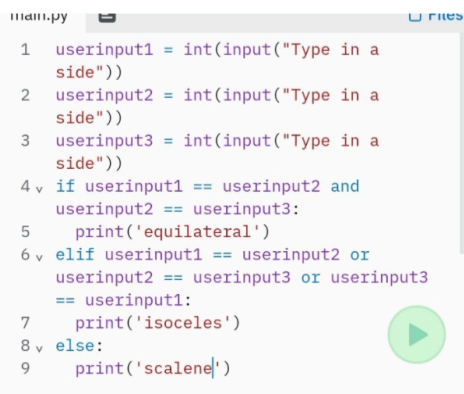
In [3]:

```
# Your code here
```

Question 3

Produce a Python program which, given three sides of a triangle, determines whether the triangle is:

1. Equilateral (all sides the same length),
2. Isosceles (two sides the same length) or
3. Scalene (no sides the same length)



```
main.py  Files
1  userInput1 = int(input("Type in a
   side"))
2  userInput2 = int(input("Type in a
   side"))
3  userInput3 = int(input("Type in a
   side"))
4  if userInput1 == userInput2 and
   userInput2 == userInput3:
5      print('equilateral')
6  elif userInput1 == userInput2 or
   userInput2 == userInput3 or userInput3
   == userInput1:
7      print('isocoles')
8  else:
9      print('scalene')
```

In [4]:

```
# Your code here
```

Question 4

It is commonly said that one human year is equivalent to 7 dog years. However this simple conversion fails to recognise that dogs reach adulthood in approximately two years. As a result, some people believe that it is better to count each of the first two human years as 10.5 dog years, and then count each additional human year as 4 dog years.

Write a program that implements the conversion from human years to dog years described in the previous paragraph. Ensure that your program works correctly for conversions of less than two human years and for conversions of two or more human years. Your program should display an appropriate error message if the user enters a negative number.

Median Questions

Question 1

The following table lists the sound level in decibels for several common noises.

Noise	Decibel Level (dB)
Jackhammer	130
Gas lawnmower	106
Alarm clock	70
Quiet room	40

Write a program that reads a sound level in decibels from the user. If the user enters a decibel level that matches one of the noises in the table then your program should display a message containing only that noise. If the user enters a number of decibels between the noises listed then your program should display a message indicating which noises the level is between. Ensure that your program also generates reasonable output for a value smaller than the quietest noise in the table, and for a value larger than the loudest noise in the table.

In [5]:

```
# Your code here
```

Question 2

Canada has three national holidays which fall on the same dates each year.

Holiday	Date
New Year's Day	Jan 1
Canada Day	July 1
Christmas Day	Dec 25

Write a program that reads a month and day from the user. If the month and day match one of the holidays listed above then your program should display the holiday's name. Otherwise your program should indicate that the entered month and day do not correspond to a fixed-date holiday.

In [6]:

```
# Your code here
```

Question 3

A particular cell phone plan includes 50 minutes of airtime and 50 text messages for £15.00 a month. Each additional minute of airtime costs £0.25, while additional text messages cost £0.15 each. All cell phone bills include an additional charge of £0.44 to support 911 call centers, and the entire bill (including the 911 charge) is subject to 5% sales tax.

Write a program that reads the number of minutes and text messages used in a month from the user. Display the base charge, additional minutes charge (if any), additional text message charge (if any), the 911 fee, tax and the total bill amount. Only display the additional minute and text message charges if the user incurred costs in these categories. Ensure that all of the charges are displayed using 2 decimal places.

In [7]:

```
# Your code here
```

Question 4

A univariate quadratic function has the form $f(x) = ax^2 + bx + c$, where a , b , and c are constants, and a is non-zero. The roots of a quadratic function can be found by finding the values of x that satisfy the quadratic equation $ax^2 + bx + c = 0$. A quadratic function may have 0, 1 or 2 real roots. These roots can be computed using the quadratic formula, shown below:

$$root = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

The portion of the expression under the square root sign is called the discriminant. If the discriminant is 0, then the equation has one real root. Otherwise the equation has two real roots, and the expression must be evaluated twice, once using a plus sign, and once using a minus sign, when computing the numerator.

Write a program that computes the real roots of a quadratic function. Your program should begin by prompting the user for the values of a , b , or c . Then it should display a message indicating the number of real roots, along with the values of the real roots (if any).

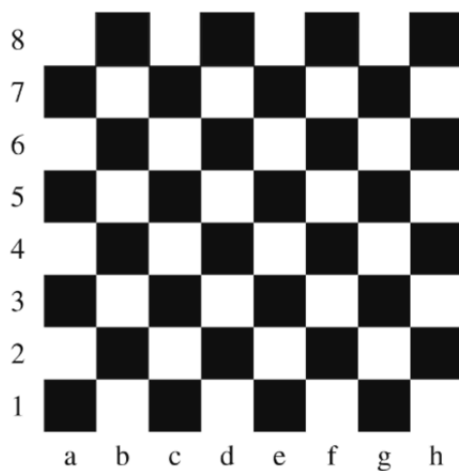
In [8]:

```
# Your code here
```

More Challenging Questions

Question 1

Positions on a chess board are identified by a letter and a number. The letter identifies the column, while the number identifies the row, as show below.



Write a program that reads a position from the user. Use an if statement to determine if the column begins with a black square or a white square. Then use modular arithmetic (%) to report the colour of the square in that row. For example, if the user enters a1 then your program should report that the square is black. If the user enters d5 then your program should report that the square is white. Your program may assume that a valid position will always be entered. It does not need to perform any error checking.

In [9]: `# Your code here`

Question 2

Electromagnetic radiation can be classified into one of 7 categories according to its frequency, as shown in the table below:

Name	Frequency range (Hz)
Radio Waves	Less than 3×10^9
Microwaves	3×10^9 to less than 3×10^{12}
Infrared light	3×10^{12} to less than 4.3×10^{14}
Visible light	4.3×10^{14} to less than 7.5×10^{14}
Ultraviolet light	7.5×10^{14} to less than 3×10^{17}
X-rays	3×10^{17} to less than 3×10^{19}
Gamma rays	3×10^{19} or more

Write a program that reads the frequency of the radiation from the user and displays the appropriate name.

In [10]: `# Your code here`

Question 3

The horoscopes commonly reported in newspapers use the position of the sun at the time of one's birth to try and predict the future. This system of astrology divides the year into twelve zodiac signs as outlined in the table below:

Zodiac sign	Date range
Capricorn	December 22 to January 19
Aquarius	January 20 to February 18
Pisces	February 19 to March 20
Aries	March 21 to April 19
Taurus	April 20 to May 20
Gemini	May 21 to June 20
Cancer	June 21 to July 22
Leo	July 23 to August 22
Virgo	August 23 to September 22
Libra	September 23 to October 22
Scorpio	October 23 to November 21
Sagittarius	November 22 to December 21

Write a program that asks the user to enter their month and day of birth. Then your program should report the user's zodiac sign as part of an appropriate output message.

```
In [11]: # Your code here
```

Question 4

Write a program that reads a date from the user and computes its immediate successor. For example, if the user enters values that represent 2013-11-18 then your program should display a message indicating that the day immediately after 2013-11-18 is 2013-11-19. If the user enters values that represent 2013-11-30 then the program should indicate that the next day is 2013-12-01. If the user enters values that represent 2013-12-31 then the program should indicate that the next day is 2014-01-01. The date will be entered in numeric form with three separate input statements; one for the year, one for the month and one for the day. Ensure that your program works correctly for leap years.

```
In [12]: # Your code here
```

Problem Set 3 - Programming Basics (cont.)

Less Challenging Questions

Question 1

Create a program to display the first 5 triangular numbers. (Triangular numbers - think of the pins in 10 pin bowling or skittles when arranged in rows form a triangles).

```
In [ ]: # Your code here
```


Question 2

Create a program that asks the user to type in the start value, end value and the step value. The program should then display the expected number sequence.

```
In [ ]: # Your code here
```

Question 3

A particular retailer is having a 60 percent off sale on a variety of discounted products. The retailer would like to help its customers determine the reduced price of the merchandise by having a printed discount table on the shelf that shows the original prices and the prices after the discount has been applied. Write a program that uses a loop to generate this table, showing the original price, the discount amount, and the new price for £4.95, £9.95, £14.95, £19.95 and £24.95. Ensure that the discount amounts and the new prices are rounded to 2 decimal places when they are displayed.

```
In [ ]: # Your code here
```

Question 4

Write a program that displays a temperature conversion table for degrees Celsius and degrees Fahrenheit. The table should include rows for all temperatures between 0 and 100 degrees Celsius that are multiples of 10 degrees Celsius. Include appropriate headings on your columns. The formula for converting between degrees Celsius and degrees Fahrenheit can be found on the Internet.

Median Questions

Question 1

In this exercise you will create a program that computes the average of a collection of values entered by the user. The user will enter 0 as a sentinel value to indicate that no further values will be provided. Your program should display an appropriate error message if the first value entered by the user is 0.

```
In [ ]: # Your code here
```

```
In [ ]:
```

Question 2

Create a program that asks the user to type in two numbers. The program should work out the lowest common multiple (LCM) of the two numbers. The LCM should be displayed.

```
In [ ]: # Your code here
```

Question 3

What's the minimum number of times you have to flip a coin before you can have three consecutive flips that result in the same outcome (either all three are heads or all three are tails)? What's the maximum number of flips that might be needed. How many flips are needed on average? In this exercise we will explore these questions by creating a program that simulates several series of coin flips.

Create a program that uses Python's random number generator to simulate flipping a coin several times. The simulated coin should be fair, meaning the probability of heads is equal to the probability of tails. Your program should flip simulated coins until either 3 consecutive heads or 3 consecutive tails occur. Display an *H* each time the outcome is heads, and a *T* each time the outcome is tails, will all of the outcomes shown on the same line. Then display the number of flips needed to reach three consecutive flips with the same outcome. When your program is run it should perform the simulation 10 times and report the average number of flips needed. Sample output is shown below:

```
H T T T (4 flips)
H H T T H T H T T H H T H T T H T T T (19 flips)
T T T (3 flips)
T H H H (4 flips)
H H H (3 flips)
T H T T H T H H T T H H T H T H H H (18 flips)
H T T H H H (6 flips)
T H T T T (5 flips)
T T H T T H T H T H H H (12 flips)
T H T T T (5 flips)
On average, 7.9 flips were needed.
```

In []:

```
# Your code here
```

Question 4

The prime factorisation of an integer, n , can be determined using the following steps:

```
initialise factor to two
while factor is less than or equal to n do
    if n is evenly divisible by factor then
        conclude that factor is a factor of n
        divide n by factor using integer division
    else
        increase factor by one
```

Write a program that reads an integer from the user. If the value entered by the user is less than 2 then your program should display an appropriate error message. Otherwise your program should display the prime numbers that can be multiplied together to compute n , with one factor appearing on each line. For example:

Enter an integer (2 or greater): 72

The prime factors of 72 are:

2
2
2
3
3

In []:

```
# Your code here
```

More Challenging Questions

Question 1 - Letter Grade to Grade Points

Ex51

(Solved—52 Lines)

At a particular university, letter grades are mapped to grade points in the following manner:

Letter	Grade points
A+	4.0
A	4.0
A−	3.7
B+	3.3
B	3.0
B−	2.7
C+	2.3
C	2.0
C−	1.7
D+	1.3
D	1.0
F	0

Exercise 51 included a table that shows the conversion from letter grades to grade points at a particular academic institution. In this exercise you will compute the grade point average of an arbitrary number of letter grades entered by the user. The user will enter a blank line to indicate that all of the grades have been provided. For example, if the user enters A, followed by C+, followed by B, followed by a blank line then your program should report a grade point average of 3.1.

You may find your solution to Exercise 51 helpful when completing this exercise. Your program does not need to do any error checking. It can assume that each value entered by the user will always be a valid letter grade or a blank line.

In []:

```
# Your code here
```

Question 2

Write a program that implements Newton's method to compute and display the square root of a number entered by a user. The algorithm for Newton's method follows:

```
Read *x* from the user
initialise guess to x/2
while guess is not good enough do
    update guess to be the average of guess and x/guess
```

When the algorithm completes, *guess* contains an approximation of the square root. The quality of the approximation depends on how you define 'good enough'. The proposed solution, *guess* was considered good enough when the absolute value of the difference between *guess guess* and *x** was less than or equal to 10^{-12}

In []:

```
# Your code here
```

Question 3

The value of π can be approximated by the following infinite series:

$$\pi \approx 3 + \frac{4}{2 \times 3 \times 4} - \frac{4}{4 \times 5 \times 6} + \frac{4}{6 \times 7 \times 8} - \frac{4}{8 \times 9 \times 10} + \frac{4}{10 \times 11 \times 12} - \dots$$

Write a program that displays 15 approximations of π . The first approximation should make use of only the first term from the infinite series. Each additional approximation displayed by your program should include one more term in the series, making it a better approximation of π than any of the approximations displayed previously.

In []:

```
# Your code here
```

Question 4

Ex72

(Solved—23 Lines)

A string is a palindrome if it is identical forward and backward. For example “anna”, “civic”, “level” and “hannah” are all examples of palindromic words. Write a program that reads a string from the user and uses a loop to determine whether or not it is a palindrome. Display the result, including a meaningful output message.

There are numerous phrases that are palindromes when spacing is ignored. Examples include “go dog”, “flee to me remote elf” and “some men interpret nine memos”, among many others. Extend your solution to Exercise 72 so that it ignores spacing while determining whether or not a string is a palindrome. For an additional challenge, extend your solution so that it also ignores punctuation marks and treats uppercase and lowercase letters as equivalent.

In []:

```
# Your code here
```

Problem Set 4 - Programming Basics (cont.)

If the question states you should write a function (`def ...`) if you are confident, please do so. If not, then write the question as a sequence.

Less Challenging Questions

Question 1

Write a program that reads integers from the user and stores them in a list. Use 0 as a sentinel value to mark the end of the input. Once all of the values have been read your program should display them (except for the 0) in reverse order, with one value appearing on each line.

In []:

```
# Your code here
```

Question 2

Write a program that reads numbers from the user until a blank line is entered. Your program should display the average of all of the values entered by the user. Then the program should display all of the below average values, followed by all of the average values (if any), followed by all of the above average values. An appropriate label should be displayed before each list of values.

Question 3

Write a function that determines whether or not a list of values is in sorted order (either ascending or descending). The function should return **True** if the list is already sorted. Otherwise it should return **False**.

Write a main program that reads a list of numbers from the user and then uses your function to report whether or not the list is sorted.

Make sure you consider these questions when completing this exercise: Is a list that is empty in sorted order? What about a list containing one element?

In []:

Your code here

Question 4

Morse code is an encoding scheme that uses dashes and dots to represent numbers and letters. In this exercise, you will write a program that uses a dictionary to store the mapping from letters and numbers to Morse code. Use a period to represent a dot, and a hyphen to represent a dash. The mapping from letters and numbers to dashes and dots is shown in Table 6.1, below.

Your program should read a message from the user. Then it should translate each letter and number in the message to Morse code, leaving a space between each sequence of dashes and dots. Your program should ignore any characters that are not letters or numbers. The Morse code for Hello, World! is shown below:

.... . .-.. .-. --- .-- --- .- .-. -. .

Table 6.1 Morse Code Letters and Numbers

Letter	Code	Letter	Code	Letter	Code	Number	Code
A	.-	J	.-.-.	S	...-	1	.-.-.-.
B	-...-	K	-.--	T	-	2	..-.-.
C	-.-.-	L	.-...-	U	...-	3	...--
D	-...-	M	--	V	...--	4-
E	.	N	-. .	W	.-.-	5
F	..-.-	O	---	X	-.-.-	6	-....
G	--.	P	.-.-.	Y	-.--	7	--...
H	Q	---.-	Z	---..	8	-----
I	..	R	.-. .	0	-----	9	-----

Median Questions

Question 1

In this exercise you will create a program that identifies all of the words in a string entered by the user. Begin by writing a function that takes a string of text as its only parameter. Your function should return a list of the words in the string with the punctuation marks at the edges of the words removed. The punctuation marks that you must remove include commas, periods, question marks, hyphens, apostrophes, exclamation points, colons, and semicolons. Do not remove punctuation marks that appear in the middle of a words, such as the apostrophes used to form a contraction. For example, if your function is provided with the string "Examples of contractions include: don't, isn't, and wouldn't." then your function should return the list ["Examples", "of", "contractions", "include", "don't", "isn't", "and", "wouldn't"].

Write a main program that demonstrates your function. It should read a string from the user and display all of the words in the string with the punctuation marks removed.

In []:

```
# Your code here
```

Question 2

Pig Latin is a language constructed by transforming English words. While the origins of the language are unknown, it is mentioned in at least two documents from the nineteenth century, suggesting that it has existed for more than 100 years. The following rules are used to translate English into Pig Latin:

- If the word begins with a consonant (including y), then all letters at the beginning of the word, up to the first vowel (excluding y), are removed and then added to the end of the word, followed by ay. For example, computer becomes omputercay and think becomes inkthay.
- If the word begins with a vowel (not including y), then way is added to the end of the word. For example, algorithm becomes algorithm way and office becomes officeway.

Write a program that reads a line of text from the user. Then your program should translate the line into Pig Latin and display the result. You may assume that the string entered by the user only contains lowercase letters and spaces.

In []:

```
# Your code here
```

Question 3

On some basic cell phones, text messages can be sent using the numeric keypad. Because each key has multiple letters associated with it, multiple key presses are needed for most letters. Pressing the number once generates the first letter on the key. Pressing the number 2, 3, 4 or 5 times generates the second, third, fourth or fifth character listed for that key.

Key	Symbols
1	. , ? ! :
2	A B C
3	D E F
4	G H I
5	J K L
6	M N O
7	P Q R S
8	T U V
9	W X Y Z
0	<i>space</i>

Write a program that displays the key presses that must be made to enter a text message read from the user. Construct a dictionary that maps from each letter or symbol to the key presses. Then use the dictionary to generate and display the presses for the user's message. For example, if the user enters Hello, World! then your program should output 4433555555666110966677755531111. Ensure that your program handles both uppercase and lowercase letters. Ignore any characters that aren't listed in the table above such as semicolons and brackets.

In []:

```
# Your code here
```

Question 4

A sublist is a list that makes up part of a larger list. A sublist may be a list containing a single element, multiple elements, or even no elements at all. For example, [1], [2], [3] and [4] are all sublists of [1, 2, 3, 4]. The list [2, 3] is also a sublist of [1, 2, 3, 4], but [2, 4] is not a sublist [1, 2, 3, 4] because the elements 2 and 4 are not adjacent in the longer list. The empty list is a sublist of any list. As a result, [] is a sublist of [1, 2, 3, 4]. A list is a sublist of itself, meaning that [1, 2, 3, 4] is also a sublist of [1, 2, 3, 4].

In this exercise you will create a function, `isSublist`, that determines whether or not one list is a sublist of another. Your function should take two lists, `larger` and `smaller`, as its only parameters. It should return `True` if and only if `smaller` is a sublist of `larger`. Write a main program that demonstrates your function.

In []:

```
# Your code here
```

More Challenging Questions

Question 1 - Line of Best Fit

A line of best fit is a straight line that best approximates a collection of n data points. In this exercise, we will assume that each point in the collection has an x coordinated and a y coordinate. The symbols \bar{x} and \bar{y} are used to represent the average x value in the collection and the average y value in the collection respectively. The line of best fit is represented by the equatation $y = mc + b$ where m and b are calculated using the following formulae:

$$m = \frac{\sum xy - \frac{(\sum x)(\sum y)}{n}}{\sum x^2 - \frac{(\sum x)^2}{n}}$$

and

$$b = \bar{y} - m\bar{x}$$

Write a program that reads a collection of points from the user. The user will enter the x part of the first coordinate on its own line, followed by the y part of the first coordinate on its own line. Allow the user to continue entering coordinates, with the x and y parts each entered on their own line, until your program reads a blank line for the x coordinate. Display the formula for the line of best fit in the form $y = mx + b$ by replacing m and b with the values you calculated using the preceding formulas. For example, if the user inputs the coordinates $(1, 1)$, $(2, 2.1)$ and $(3, 2.9)$ then your program should display $y = 0.95x + 0.1$.

Hint: working solution: <https://replit.com/@lanGrant4/Y12-Problem-Set-Line-of-Best-Fit#main.py>

In []:

```
# Your code here
```

Question 2

A proper divisor of a positive integer, n , is a positive integer less than n which divides evenly into n . Write a function that computes all of the proper divisors of a positive integer. The integer will be passed to the function as its only parameter. The function will return a list containing all of the proper divisors as its only result. Complete this exercise by writing a main program that demonstrates the function by reading a value from the user and displaying the list of its proper divisors. Ensure that your main program only runs when your solution has not been imported into another file.

In []:

```
# Your code here
```

Question 3

In a Canadian postal code, the first, third and fifth characters are letters while the second, fourth and sixth characters are numbers. The province can be determined from the first character of a postal code, as shown in the following table. No valid postal codes currently begin with D, F, I, O, Q, U, W, or Z.

Province	First character(s)
Newfoundland	A
Nova Scotia	B
Prince Edward Island	C
New Brunswick	E
Quebec	G, H and J
Ontario	K, L, M, N and P
Manitoba	R
Saskatchewan	S
Alberta	T
British Columbia	V
Nunavut	X
Northwest Territories	X
Yukon	Y

The second character in a postal code identifies whether the address is rural or urban. If that character is a 0 then the address is rural. Otherwise it is urban.

Create a program that reads a postal code from the user and displays the province associated with it, along with whether the address is urban or rural. For example, if the user enters T2N 1N4 then your program should indicate that the postal code is for an urban address in Alberta. If the user enters X0A 1B2 then your program should indicate that the postal code is for a rural address in Nunavut or Northwest Territories. Use a dictionary to map from the first character of the postal code to the province name. Display a meaningful error message if the postal code begins with an invalid character.

In []:

```
# Your code here
```

Question 4

While the popularity of cheques as a payment method has diminished in recent years, some companies still issue them to pay employees or vendors. The amount being paid normally appears on a cheque twice, with one occurrence written using digits, and the other occurrence written using English words. Repeating the amount in two different forms makes it much more difficult for an unscrupulous employee or vendor to modify the amount on the cheque before depositing it.

In this exercise, your task is to create a function that takes an integer between 0 and 999 as its only parameter, and returns a string containing the English words for that number. For example, if the parameter to the function is 142 then your function should return "one hundred forty two". Use one or more dictionaries to implement your solution rather than large if/elif/else constructs. Include a main program that reads an integer from the user and displays its value in English words.

In []:

```
# Your code here
```

Problem Set 5 - Programming Basics (cont.)