

Intro to Python – Lesson 19 and 20

Today we want to look at dates and how we can manipulate them. Check out these videos:

<https://www.youtube.com/watch?v=eirjyP2qcQ> (Work with dates – also shows how to work with times around 12 min. Only the date processing is needed for now – especially creating a date, using the current date, adding / subtracting dates, and the difference between dates.

<https://www.youtube.com/watch?v=zY02utxcauo> (Parse string values – from inputs - to dates and format dates for output)

Look at the document included called “Lesson 19 and 20 - Python Code - All About Dates”.

Try a few of these examples and we will discuss in class.

- Travel claims for a company require a start date and an end date. Make sure the end date is greater than the start date. Determine the number of days for the claim and calculate the total claim as the number of days multiplied by a per diem of \$56.00.
- Input the date of a sales invoice (YYYY-MM-DD) and the amount of the invoice (float). The terms offered to your customers are 2 / 10 N 30 – 2% off if paid in 10 days, with the balance due in 30 days. Display the original amount of the invoice, the discount date, the amount due with the discount, the due date for this invoice, and the current age of the invoice (current date – invoice date). Display results in labels with appropriate format.
- **Tricky. The expiry date of a credit card is entered as MM/YY. Ensure the middle character is a /, the first two characters are between 01 and 12, and the last 2 characters are within 4 years of the current year.
- Write a program for a hotel that helps with registration and determines the total cost of the clients stay at the hotel. Input the arrival and departure dates and display the results as shown below.

The Hotel Reservation Program

Enter the arrival date (YYYY-MM-DD): 2021-07-03

Enter the departure date (YYYY-MM-DD): 2021-07-06

Arrival date: July 2, 2021

Departure date: July 5, 2021

Nightly rate: \$105.00 (High Season Rate Applied)

Total nights: 3

Total price: \$315.00

Continue (Y/N): n

Thank you for using The Hotel Reservation Program. Bye Bye.

The nightly rate is \$85.00 per night or \$105.00 for July and August – these are considered high season and the higher rate is applied – the message is only printed if the high rate is applied. I used dates in the high season for demonstration purposes - when you test the program you can use dates both in the high season and out of the high season.

Here is another full program to practice strings and dates --- and loops and if statements and print formatting and

Write a program for One Stop Insurance Company to keep track of policy information. Note that this is a very simple version of this program – there are generally many more options and thousands of lines of calculations that could be included – we are concentrating on the validations and string functions, so I have kept the processing at a minimum.

Input for the program will include the policy date (YYYY-MM-DD), the customer first name, last name, street address, city, province, postal code, a home phone, work phone and cell phone number, whether this is a New policy or a Renewal (N/R), a value to indicate if this is a Home policy, Auto Policy or Both (H/A/B) – notice what that spelled out LOL, and a value for extra costs – can be based on Extra liability costs 75.00, extra person coverage is 90.00, and content insurance is 110.00 – Include a few print statements before this input showing the cost and the user can type in the dollar amount based on what the user wants.

Validate the first name and last name to allow letters and the – and ‘ and adjust to title case, the postal code to follow the A1A1A1 format and adjust to A1A 1A1 and all caps, the phone numbers to be entered in the format 9999999999 and adjusted to (999) 999-9999, the value for new or renewal to be 1 character and be an N or R, and the policy type to be one character and be an H, A or B. Adjust each to upper case. The extra costs (float) must be a valid number not exceeding 275.00.

Perform the following calculations for the program – use a few constants:

The Base Coverage is calculated based on the Type selected. The base for a home policy is 400.00, the base for an auto policy is 700.00, and both have a base of 1000.00.

If the user selected the renewal option, deduct 10% from the base coverage cost.

The subtotal is found by adding the base coverage and the extra costs, the HST is calculated using a rate of 15%, and the policy total is the subtotal plus the HST.

The company allows their customers to pay over 8 equal payments. Calculate the Interest using the formula $I = PRT$ where P is the policy total, R is the interest rate – use 5.4%, and T is the number of years (use 8/12 since this is only an 8-month payment). Add the Interest to the policy total with a processing fee of \$47.95, then divide the result by 8 to find the monthly payment. The first monthly payment is due 30 days from the policy date.

To create the policy number, use the form XX-XXXX-XXX where the first two characters are the customer initials, the middle 4 characters are the year of the policy, and the last 3 characters are a random number between 100 and 999.

For customers who choose to pay the entire amount up front, the discount date is 10 days from the policy date and an incentive for the customer to save 2% if they pay the full amount within 10 days. The discount amount will be reduced by 2% of the subtotal (before taxes). Finally, the full payment date is 45 days from the policy date.

Display the following results for the program – notice the name is first initial and last name followed by the street address on the second line, and the city, province, and postal code on the third line. Center the last line over the 40 characters of the display. Only print the line below the base cost if it is a renewal.

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          1          2          3          4
1234567890123456789012345678901234567890
ONE STOP INSURANCE                                dd-MMM-yy
CUSTOMER POLICY SUMMARY                          XX-XXXX-XXX
-----
Client: X. XXXXXXXXXXXXXXXXXXXXXXXX
        XXXXXXXXXXXXXXXXXXXXXXXX
        XXXXXXXXXXXXXXXXXXXXX, XX XXXXXX

Policy base cost:                                $9,999.99
(10% reduction for policy renewal)
Extra costs:                                     $9,999.99
Subtotal:                                       $9,999.99
HST:                                           $9,999.99
-----
Policy total:                                  $9,999.99

For monthly payment customers:
    Monthly payment:                            $9,999.99
    First payment date:                        dd-MMM-yy

For payment in full:
    Discount date:                             dd-MMM-yy
    Discount amount:                          $9,999.99
    Full payment date:                        dd-MMM-yy
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        "ONE STOP - Insuring the world!"
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See you at 1.