File Edit View Insert Cell Kernel Navigate Widgets Help   Trusted   Python 3

0.1 Note:

- This notebook will be graded automatically, you need to follow these guidelines to obtain your grade.
- **Don't edit or remove the line that starts with `%%code`.**
- **make sure your program output matches the sample runs given. if the sample run for example prints 'Two', your code must print the same NOT '2'.**
- **For Question 1 make sure to use the same constant and variable names as given**
- **Develop your C code in the C compiler of your choice, and then copy paste the whole code where it says `// YOUR CODE HERE`.**
- **DO NOT RUN anything in Jupyter Notebook.**
- **Don't forget to write your name and ID below.**

In [1]:
```
 
```

1 ICS 104

2 HW 4

In [2]:
```python
#don't modify the content of this cell just run it
from IPython.core.magic import (register_line_magic,
                                register_cell_magic)
_store = {}
ip = get_ipython()
@register_cell_magic
def code(line, cell):
    _store[line.strip()]=cell
    ip.run_cell(cell)
```

2.1 Question 1 (30 points):

Convert the following Python program into an equivalent C program.

You **MUST** use the same variables and constants and produce the same output. Failing to do so will result in loosing points.

In [1]:
```python
##
#  This program computes the volume (in liters) of a six-pack of soda
#  cans and the total volume of a six-pack and a two-liter bottle.
#

# Liters in a 12-ounce can and a two-liter bottle.
CAN_VOLUME = 0.355
BOTTLE_VOLUME = 2

# Number of cans per pack.
cansPerPack = 6

# Calculate total volume in the cans.
totalVolume = cansPerPack * CAN_VOLUME
print("A six-pack of 12-ounce cans contains", totalVolume, "liters.")

# Calculate total volume in the cans and a two-liter bottle.
totalVolume = totalVolume + BOTTLE_VOLUME
print("A six-pack and a two-liter bottle contain", totalVolume, "liters.")
```

```
A six-pack of 12-ounce cans contains 2.13 liters.
A six-pack and a two-liter bottle contain 4.13 liters.
```

In [ ]:
```
%%code q1
// YOUR CODE HERE
#include <stdio.h>
// This program computes the volume (in liters) of a six-pack of soda
// cans and the total volume of a six-pack and a two-liter bottle.
int main() {
    int BOTTLE_VOLUME , cansPerPack;
    double CAN_VOLUME , totalVolume;
    // Liters in a 12-ounce can and a two-liter bottle.
    CAN_VOLUME = 0.355;
    BOTTLE_VOLUME = 2;
    // Number of cans per pack.
    cansPerPack = 6;
    //Calculate total volume in the cans.
    totalVolume = cansPerPack * CAN_VOLUME;
    printf("A six-pack of 12-ounce cans contains %.2f liters.\n",totalVolume);
    // Calculate total volume in the cans and a two-liter bottle.
    totalVolume = totalVolume + BOTTLE_VOLUME;
    printf("A six-pack and a two-liter bottle contain %.2f liters.", totalVolume);
    return 0;
}
```

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2.2 Question 2 (30 points):

Write a C code that prompts the user to enter his/her first and last initials. Next, it prompts the user to enter two "three digits" integer numbers as in the below output. Last, it displays the following:

> Note: assume the user will only enter three digits integers

Sample runs:

```
Enter your first and last initials> A B

Enter a three digits integer number> 123

Enter another three digits integer number> 456

Thank you A. B.:

The addition of 123 and 456 is:

  123
 +456
 -----
 =579
```

```
Enter your first and last initials> M A

Enter a three digits integer number> 234

Enter another three digits integer number> 845

Thank you M. A.:

The addition of 234 and 845 is:

  234
 +845
 -----
 =1079
```

In [ ]:
```
%%code q2
// YOUR CODE HERE
//
#include <stdio.h>

int main()
{

    char ch1 , ch2,
    str[] = "-----";
    int num1 , num2,total;
    printf("Enter your first and last initials> ");
    scanf(" %c", &ch1);
    scanf(" %c", &ch2);
    printf("Enter a three digits integer number>");
    scanf("%d" , &num1);
    printf("Enter another three digits integer number>");
    scanf("%d" , &num2);
    total = num1 + num2;
    printf("Thank you %c. %c.:\n",ch1 , ch2);
    printf("The addition of %d and %d is:\n", num1 ,num2);
    printf("\n");
    printf("%9d\n",num1);
    printf("%6c%3d\n",'+',num2);
    printf("%10s\n",str);
    printf("%6c%3d",'=',total);
    return 0;
}
```

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2.3 Question 3 (40 points):

Write a program in C that converts temperature given in degree Celsius to the temperature in degree Fahrenheit.

Hint:

Temperature conversion formula from degree Celsius to Fahrenheit is given by -

$$^{\circ}F = \left(^{\circ}C \times \frac{9}{5}\right) + 32$$

Sample Run

```
Enter temperature in Celsius 24.5

24.50 Celsius = 76.10 Fahrenheit
```

In [ ]:
```
%%code q3
// YOUR CODE HERE
#include <stdio.h>

int main()
{
    double tempC , tempF;
    printf("Enter temperature in Celsius ");
    scanf("%lf",&tempC);
    tempF = (tempC * (9.0/5)) + 32;
    printf ("%.2f Celsius = %.2f Fahrenheit",tempC,tempF);
}
```

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