NYU, Tandon School of Engineering
Extended Bridge to CS — [redacted]

Homework #2

Submission instructions:

1. For this assignment you should turn in 5 files:
   - Four '.cpp' files, one for each question 1 to 4.
     Name your files 'YourNetID_hw2_q1.cpp', 'YourNetID_hw2_q2.cpp', etc.
   - A '.pdf' file with your answers for questions 5-9.**Each question should start on a new page!** Name your file 'YourNetID_hw2_q5to9.pdf'

2. **Typing your solutions would grant you 5 extra points.**

3. **You should submit your homework in the Gradescope system.**
   Note that when submitting the pdf file, you would be asked to assign the pages fromyour file to their corresponding questions.

4. **You can work and submit in groups of up to 4 people. If submitting as a group, make sure to associate all group members to the submission on gradescope.**

5. For the coding questions, pay special attention to the style of your code. Indent your code correctly, choose meaningful names for your variables, define constants whereneeded, etc.

6. For the math questions, you are expected to justify all your answers, not just to give thefinal answer (unless explicitly asked to).
   As a rule of thumb, for questions taken from zyBooks, the format of your answers, should be like the format demonstrated in the sample solutions we exposed.

Question 1:

Write a program that asks the user to enter a number of quarters, dimes, nickels and pennies and then outputs the monetary value of the coins in the format of dollars andremaining cents.

Your program should interact with the user **exactly** as it shows in the following example:

```
Please enter number of coins:
# of quarters:13
# of dimes: 4
# of nickels: 11
# of pennies: 17
The total is 4 dollars and 37 cents
```

Question 2:

Write a program that asks the user to enter an amount of money in the format of dollars andremaining cents. The program should calculate and print the minimum number of coins (quarters, dimes, nickels and pennies) that are equivalent to the given amount.

Hint: In order to find the minimum number of coins, first find the maximum number of quarters that fit in the given amount of money, then find the maximum number of dimes that fit in the remaining amount, and so on.

Your program should interact with the user **exactly** as it shows in the following example:

```
Please enter your amount in the format of dollars and cents separated by a space:
4  37
4 dollars and 37 cents are:
17 quarters, 1 dimes, 0 nickels and 2 pennies
```

Question 3:

Suppose John and Bill worked for some time and we want to calculate the total time both ofthem worked. Write a program that reads number of days, hours, minutes each of them worked, and prints the total time both of them worked together as days, hours, minutes.

Hint: Try to adapt the elementary method for addition of numbers to this use.

Your program should interact with the user **exactly** as it shows in the following example:

```
Please enter the number of days John has worked: 2
Please enter the number of hours John has worked: 12
Please enter the number of minutes John has worked: 15

Please enter the number of days Bill has worked: 3
Please enter the number of hours Bill has worked: 15
Please enter the number of minutes Bill has worked: 20

The total time both of them worked together is: 6 days, 3 hours and 35 minutes.
```

Question 4:

Write a program that reads from the user two positive integers, and prints the result of when we add, subtract multiply, divide, div and mod them.

Your program should interact with the user **exactly** as it shows in the following example:

Please enter two positive integers, separated by a space:

14 4

14 + 4 = 18

14 – 4 = 10

14 * 4 = 56

14 / 4 = 3.5

14 div 4 = 3

14 mod 4 = 2

Question 5:

a) Solve the following questions from the Discrete Math zyBook:
   1. Exercise 1.12.2, sections b, e
   2. Exercise 1.12.3, section c
   3. Exercise 1.12.5, sections c, d

b) Solve the following questions from the Discrete Math zyBook:
   1. Exercise 1.13.3, section b
   2. Exercise 1.13.5, sections d, e

Question 6:

Solve Exercise 2.4.1, section d; Exercise 2.4.3, section b, from the Discrete Math zyBook:

Question 7:

Solve Exercise 2.5.1, section d; Exercise 2.5.4, sections a, b; Exercise 2.5.5, section c, from the Discrete Math zyBook:

Question 8:

Solve Exercise 2.6.6, sections c, d, from the Discrete Math zyBook:

Question 9:

Solve Exercise 2.7.2, section b, from the Discrete Math zyBook: