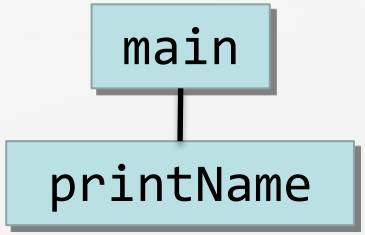
Practice 3

Problem 1: User-Defined Function Basic

- Write a program to print your name, as shown below.

```
**************************************************
*                                                *
*             My name is xxx                     *
*                                                *
**************************************************
```

- The main function should have only a function call, and a called function prints the name. The structure chart would be



Problem 2: Function with a Return Value

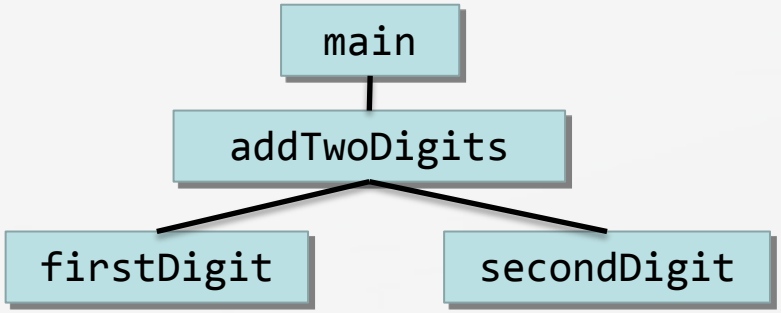
- Write a program that calculates a mean of three numbers.
  - Your main program first get three integer numbers from a user.
  - Then, call "mean" function with the three numbers as input parameters of the function
  - The "mean" function calculates the mean of the three integer parameters and return the result.
  - The prototype of the "mean" function would have a form

```
float mean(int number1, int number2, int number3)
```

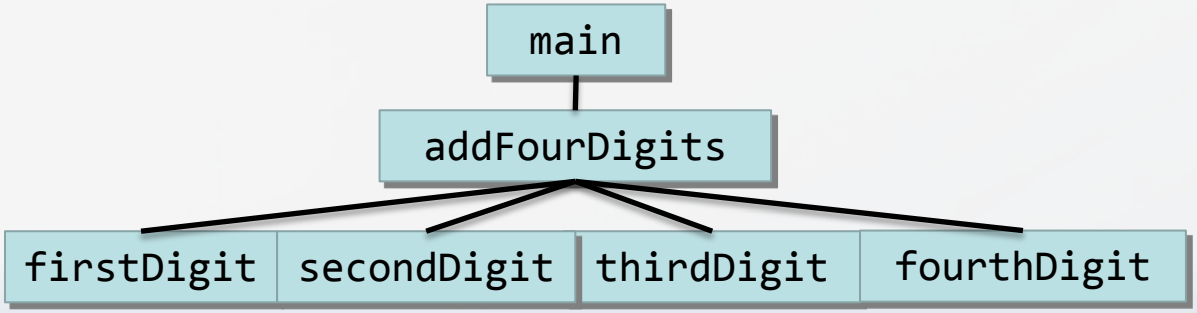
  - Lastly, the main function prints the returned value.

Problem 3: Adding Digits

- Program 4-5 on page 134 calculates the sum of the two least significant digits of a integer number. Extend the program so that the program can handle a 4-digit number.
- The structure chart of the original program is



- The structure chart of the extended program would be



Problem 4: Fibonacci Number

- A Fibonacci number is a member of a set in which each number is the sum of the previous two numbers. The series begins
  0, 1, 1, 2, 3, 5, 8, 13, 21 …
- Write a function that get two adjacent Fibonacci numbers and calculates/prints the next five numbers in the Fibonacci series.
- For example, if the input parameters of the function are 1 and 2, then the function prints 3, 5, 8, 13, 21.
- The main function does nothing but calling the function.
- The code structure of the program should be

```
void printNextFiveFib(int a, int b) {
    /*   Fill here   */
}

int main()
{
    printNextFiveFib(3,5);
    return 0;
}
```

- You have to fill up the printNextFiveFib function

Problem 5: Nested Function Calls

- Make the following two functions
  - int add(int number1, int number2) → adds number1 and number 2 and return the result
  - int subtract(int number1, int number2) → adds number1 and number 2 and return the result
- In the main function, calculate and print the result of the following equation using only the functions you make. (you must not directly do the calculation in the main function)

  `3+5-(20+45-(50-25)+2-(30-10))`
- Hint: a-(b+c) can be calculated by the code

  `subtract(a,add(b,c))`
- The answer is -14

Problem 6: Fruit Shop – Extension

- Extend your fruit shop program by utilizing functions.
  - Recall the problem 7 in the practice 2
  - The program calculated total price of a purchase under given numbers of purchases and unit prices of five different fruits.
  - Unit price of the items
    apple: 5000
    banana: 1500
    peach: 3500
    grape: 6000
    melon: 1200
  - Make your own function that calculates unit total price (sub-total price for each item). Prototype of the function is
    int unitTotal(int unitPrice, int numberPurchase)
    - For example, unitTotal(5000,4) returns 20000
  - You may need to call this function five times to calculate the sub-total price of each fruit.
  - Print the same report as shown right.

```
How many apples did you buy: 2
How many bananas did you buy: 2
How many peaches did you buy: 3
How many grapes did you buy: 1
How many melons did you buy: 4
Price for apple: 2 * 5000 = 10000
Price for banana: 2 * 1500 = 3000
Price for peach: 3 * 3500 = 10500
Price for grape: 1 * 6000 = 6000
Price for melon: 4 * 1200 = 4800
Total price of your purchase: 34300
```