

CS 111

writing functions

Model for function

A function is coded with the following model:

```
TITLE LINE {  
    BLOCK OF C++ CODE  
}
```

Example:

```
double square(double num){  
    return num * num;  
}
```

Model for title line

- RETURN_TYPE FUNCTION_NAME (PARAMETER_LIST)
 - The parameter list is a comma-separated list giving the parameters (input data)
 - Each parameter is specified by a variable declaration with its type and the name that will be used for it in the function code block
- Examples:
 - `int max(int a, int b)`
 - `char firstLetter(string name)`
 - `bool coPrime(int x, int y)`

Creating title lines

1. What type of return value does it calculate?
2. How many parameters does it use?
3. What are the types of those parameters?

Example 1

```
int main(){
    string first = "John", last = "Doe";
    string full = fullName(first, last);
    cout << "Full name: " << full << endl;
    return 0;
}
```

- What is the title line for **fullName()**?
- Write the function.

Example 2

```
int main(){  
    int a = 3, b = 4, c = 5;  
  
    double average = averageThreeNums(a, b, c);  
  
    cout << average << endl;  
  
    return 0;  
  
}
```

- What is the title line for **averageThreeNums()**?
- Write the function.

Example 3

```
int main(){  
    int x = 0, y = 1, z = 2;  
    x = maximum(x + z, y - x); // sets x as maximum value  
    cout << x << endl;  
    return 0;  
}
```

- What is the title line for **maximum()**?
- Write the function.

Example 4

```
int main(){  
    int n = 19836;  
    cout << lastDigit(n) << endl;  
    return 0;  
}
```

- What is the title line for **lastDigit()**?
- Write the function.

Example 5

```
int main(){  
    double b = 1.9;  
    print(sqrt(b), rand());  
    return 0;  
}
```

- What is the title line for **print()**?
- Write the function.

Comparison

```
int main() {  
    srand(time(0));  
    int roll = rand() % 6 + 1;  
    cout << roll << endl;  
    for(int i = 1; i <= 5; i++){  
        roll = rand() % 6 + 1;  
        cout << roll << " ";  
    }  
    return 0;  
}
```

```
int rollDie(){  
    int roll = rand() % 6 + 1;  
    return roll;  
}
```

```
int main() {  
    srand(time(0));  
    int roll = rollDie();  
    cout << roll << endl;  
    for(int i = 1; i <= 5; i++){  
        roll = rollDie();  
        cout << roll << " ";  
    }  
    return 0;  
}
```

```
int main() {
    int size1, size2;
    cout << "I will print two squares for you.\n";
    cout << "Size for first? ";
    cin >> size1;
    cout << "Size for second? ";
    cin >> size2;
    for(int r = 1; r <= size1; r++){
        for(int c = 1; c <= size1; c++){
            cout << "*";
        }
        cout << endl;
    }
    for(int r = 1; r <= size2; r++){
        for(int c = 1; c <= size2; c++){
            cout << "*";
        }
        cout << endl;
    }
    return 0;
}
```

```
void printSquare(int dimension){
    for(int r = 1; r <= dimension; r++){
        for(int c = 1; c <= dimension; c++){
            cout << "*";
        }
        cout << endl;
    }
}
```

```
int main() {
    int size1, size2;
    cout << "I will print two squares for you.\n";
    cout << "Size for first? ";
    cin >> size1;
    cout << "Size for second? ";
    cin >> size2;
    printSquare(size1);
    printSquare(size2);
    return 0;
}
```