
Functions

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Passing Arguments

- Arguments are passed into functions
- Parameters are evaluated in the order given
- A **copy** of the argument is made in the parameter
- If a parameter is changed in the function, is that reflected in main?

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Passing Arguments

- Pass by value
 - arguments are **copied** into the parameter list
 - changes made in the function will **not** be reflected in main
- Pass by reference
 - changes made in the function are reflected in the main

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Q.1. Example

```
void swap(int &, int &);
int main(void)
{
    int i, j;
    cin >> i >> j;
    swap(i, j);
    cout << i << j;
    return 0;
}

void swap(int & num1, int & num2)
{
    int temp;
    temp = num1;
    num1 = num2;
    num2 = temp;
    return;
}
```

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Rules for Parameter Lists

- Same number of arguments as parameters
- Arguments & parameters are matched by position
- Arguments & parameters must have the same type
- The names of the arguments and parameters may be the same or different
- For reference parameters only, the parameter must be a single, simple variable

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Q.2. Example

- Given the following function prototype:
`void checkIt(float &, float &, int, int, char &);`

- And declarations in main:

```
float x, y;
```

```
int m;
```

```
char next;
```

Which are legal?

```
checkIt(x, y, m+3, 10, next);
```

```
checkIt(m, x, 30, 10, 'c');
```

```
checkIt(x, y, m, 10);
```

```
checkIt(35.0, y, m, 12, next);
```

```
checkIt(x, y, m, m, c);
```

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Q.3. What is the output?

```
void changeIt(int, int&, int&); void changeIt(int j, int&
int main() i, int& l)
{
  int i, j, k, l;
  i = 2;
  j = 3;
  k = 4;
  l = 5;
  changeIt(i, j, k);
  cout << i << j << k << endl;
  changeIt(k, l, i);
  cout << i << k << l << endl;
}
{
  i++;
  j += 2;
  l += i;
}
```

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Q.4. Program

- Write a function to compute the sum and average of three integers, and return the values of sum and average.
- An example function call would look like:
 - `sumAndAverage(4, 5, 6, sum, average);`

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