Program execution and the stack

```
→  void main(String[] args) {
     int a = 2, b = 3, c = 4;
     int d = sum(a, b, c);
     System.out.println(d);
   }
   void sum(int x, int y, int z) {
     int result = add(x, y);
     result = add(result, z);
     return result;
   }
   void add(int x, int y) {
     int result = x + y;
     return result; }
```

Stack:

- main: args = *<reference>*

Program execution and the stack

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Stack:

- main: args = *<reference>*

Program execution and the stack

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      int result = add(x, y);
      result = add(result, z);
      return result;
    }
    void add(int x, int y) {
      int result = x + y;
      return result; }
```

Stack:

- main: args = *<reference>*, a = 2

Program execution and the stack

```
    void main(String[] args) {
→     int a = 2, b = 3, c = 4;
      int d = sum(a, b, c);
      System.out.println(d);
    }
    void sum(int x, int y, int z) {
      int result = add(x, y);
      result = add(result, z);
      return result;
    }
    void add(int x, int y) {
      int result = x + y;
      return result; }
```

Stack:

- main: args = <*reference*>, a = 2, b = 3

Program execution and the stack

```
   void main(String[] args) {
→    int a = 2, b = 3, c = 4;
     int d = sum(a, b, c);
     System.out.println(d);
   }
   void sum(int x, int y, int z) {
     int result = add(x, y);
     result = add(result, z);
     return result;
   }
   void add(int x, int y) {
     int result = x + y;
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```

Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4

Program execution and the stack

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  void main(String[] args) {
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Stack:

- main: args = *<reference>*, a = 2, b = 3, c = 4

Program execution and the stack

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  void main(String[] args) {
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Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4

Program execution and the stack

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  void main(String[] args) {
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```

Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4

Program execution and the stack

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→ void add(int x, int y) {
    int result = x + y;
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```

Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4
- add: x = 2, y = 3

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
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Stack:

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Program execution and the stack

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```

Stack:

- main: args = *<reference>*, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4
- add: x = 2, y = 3, result = 5

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
    int d = sum(a, b, c);
    System.out.println(d);
  }
  void sum(int x, int y, int z) {
    int result = add(x, y);
    result = add(result, z);
    return result;
  }
  void add(int x, int y) {
    int result = x + y;
→   return result; }
```

Stack:

- main: args = *<reference>*, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4
- add: x = 2, y = 3, result = 5

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
    int d = sum(a, b, c);
    System.out.println(d);
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  void sum(int x, int y, int z) {
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  }
  void add(int x, int y) {
    int result = x + y;
    return result; }
```

Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4, result = 5

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
    int d = sum(a, b, c);
    System.out.println(d);
  }
  void sum(int x, int y, int z) {
    int result = add(x, y);
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Stack:

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Program execution and the stack

```
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Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4, result = 5
- add: x = 5, y = 4

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
    int d = sum(a, b, c);
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Stack:

- main: args = *<reference>*, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4, result = 5
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Program execution and the stack

```
  void main(String[] args) {
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  void add(int x, int y) {
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    return result; }
```

Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4, result = 5
- add: x = 5, y = 4, result = 9

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
    int d = sum(a, b, c);
    System.out.println(d);
  }
  void sum(int x, int y, int z) {
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    int result = x + y;
→   return result; }
```

Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4, result = 5
- add: x = 5, y = 4, result = 9

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
    int d = sum(a, b, c);
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```

Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
- sum: x = 2, y = 3, z = 4, result = 9

Program execution and the stack

```
  void main(String[] args) {
    int a = 2, b = 3, c = 4;
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Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4
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Program execution and the stack

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  void main(String[] args) {
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Stack:

- main: args = *<reference>*, a = 2, b = 3, c = 4, d = 9
- println: x = 9

Program execution and the stack

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Stack:

- main: args = <*reference*>, a = 2, b = 3, c = 4, d = 9
- println: x = 9
- …

Program execution and the stack

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Program execution and the stack

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Stack: