

Chapter 1

1. Computers use binary numbers because it's easier to build electronic devices reliably if they only have to distinguish between two electric states.
2.
 1. $6 = 110$
 2. $44 = 101100$
 3. $72 = 1001000$
 4. $131 = 10000011$
3.
 1. $100 = 4$
 2. $1011 = 11$
 3. $101010 = 42$
 4. $1001110 = 78$
4.
 1. Make the cookie batter:
 - Mix the dry ingredients.
 - Cream the butter and sugar.
 - Beat in the eggs.
 - Stir in the dry ingredients.
 2. Bake the cookies:
 - Set the oven for the appropriate temperature.
 - Set the timer.
 - Place the cookies into the oven.
 - Allow the cookies to bake.
 3. Add frosting and sprinkles:
 - Mix the ingredients for the frosting.
 - Spread frosting and sprinkles onto the cookies.
5. The legal identifiers shown are `printed`, `annual_salary`, `abc`, `sum_of_data`, and `b4`.
6. `c.print("Hello, world!")`
7. Output of statements:

```
"Quotes"  
Slashes \//  
How '"confounding' "\" it is!
```

8. Output of statements:

```
name    age    height  
Archie  17     5'9"  
Betty   17     5'6"  
Jughead 16     6'
```

9. Output of statements:

```
Shaq is 7'1  
The string "" is an empty message.  
\''''
```

10. Output of statements:

```
    a  b  c"
\\
"
'''
C:
in he downward spiral
```

11. Output of statements:

```
Dear "DoubleSlash" magazine,

    Your publication confuses me.  Is it
a \\ slash or a //// slash?

Sincerely,
Susan "Suzy" Smith
```

12. print statements to produce desired output:

```
print("\"Several slashes are sometimes seen,\"")
print("said Sally. \"I've said so.\" See?")
print("\\ / \\ \\ \\ // \\ \\ \\ \\ ///")
```

13. print statements to produce desired output:

```
print("This is a test of your")
print('knowledge of "quotes" used')
print("in 'string literals.'")
print()
print("You're bound to \"get it right\"")
print("if you read the section on")
print("'quotes.'")
```

14. print statement to produce desired output:

```
print("/ \\ // \\ \\ \\ /// \\ \\ \\ \\")
```

15. Mistakes in the program:

1. line 1: The keyword `def` is missing.
2. line 2: A closing `)` is missing.

3. line 3: The text inside the parentheses should be in quotes.

16. Mistakes in the program:

1. line 2: Should be indented.
2. line 3: Should be indented.
3. line 3: A closing " mark is missing.

17. a. `def example()`:

18. Output of the program:

```
This is message1.  
This is message2.  
This is message1.  
Done with message2.  
Done with main.
```

19. Output of the program:

```
Inside first function  
Inside third function  
Inside first function  
Inside second function  
Inside first function  
Inside second function  
Inside first function  
Inside third function  
Inside first function  
Inside second function  
Inside first function
```

20. Output of the program:

```
Inside first function  
Inside first function  
Inside second function  
Inside first function  
Inside third function  
Inside second function  
Inside first function  
Inside first function  
Inside second function  
Inside first function  
Inside third function
```

21. Output of the program:

```
Inside second function  
Inside first function  
Inside first function  
Inside second function  
Inside first function  
Inside third function  
Inside first function  
Inside second function  
Inside first function
```

22. Mistakes in the program:

1. line 2: The line is indented in one too far.
2. line 2: The contents of the parentheses aren't in quotes.
3. line 3: The function call is misspelled.
4. line 5: Parentheses are missing after the function name.
5. line 5: A : is missing after the function name and parentheses.

6. line 6: A closing `)` is missing.
 7. line 7: The `"`s inside the string need to be escaped.
 8. line 7: The line shouldn't include a `;`.
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Chapter 2

1. `d. 11`

2. Results of `int` expressions:

1. 8
2. 11
3. 6
4. 4
5. 33
6. -16
7. 6.4
8. 6
9. 30
10. 1
11. -1
12. 5.0
13. 2
14. 18
15. 3
16. 4
17. 4
18. 15
19. 8
20. 1

3. Results of `double` expressions:

1. 9.0
2. 9.6
3. 2.0
4. 6.0
5. 6.0
6. 8.0
7. 1.25
8. 3.0
9. 3.0
10. 3.0
11. 5.0
12. 6.4
13. 37.0
14. 8.5
15. 9.6
16. 4.0
17. 4.8
18. 25.5

4. `e. grade = 4.0`