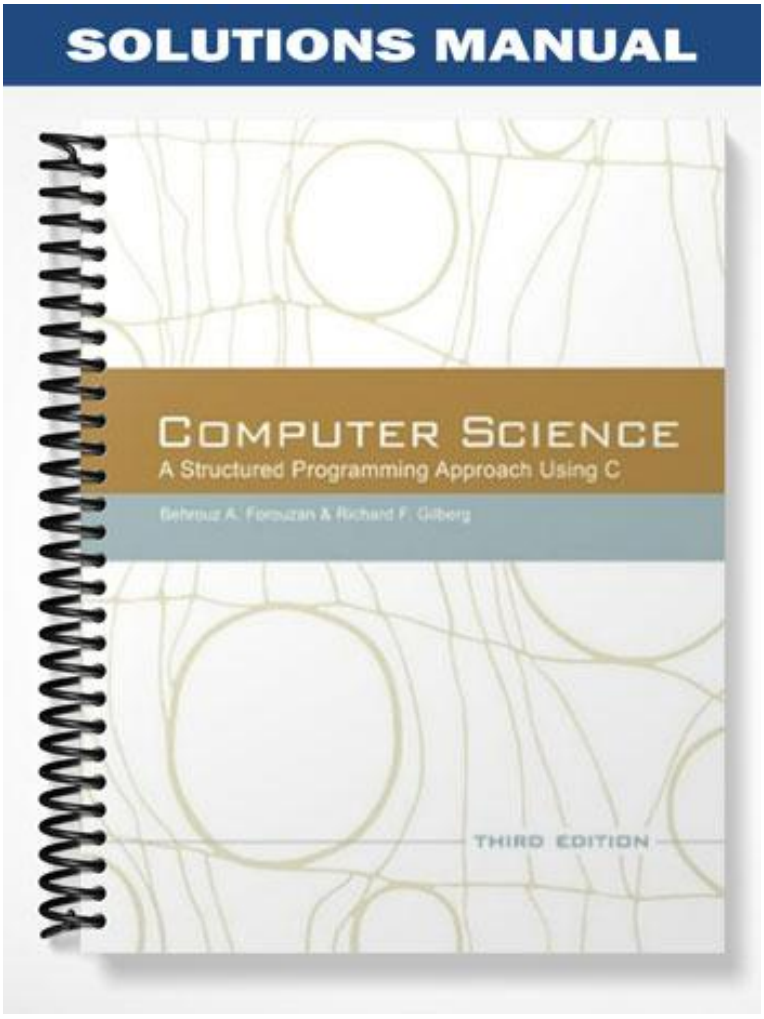
SOLUTIONS MANUAL



Solutions to Chapter 2

Review Questions

1. b. False
2. b. False
3. b. False
4. b. Declaration sections contain instructions to the computer.
5. b. Comments are used by the preprocessor to help format the program.
6. e. $salesAmount
7. d. logical
8. c. initializer
9. c. Like variables, constants have a type and may be named.
10. d. `%hd`
11. a. flag
12. d. *scanf*
13. b. The ampersand

Exercises

14. b and c
15. c and e
16. c, d, and e
17.
    a. integer
    b. floating-point real
    c. character
    d. string
    e. string
18. b, c, and e
19.
    a. string
    b. integer
    c. string
    d. character
    e. floating point real
20.
    a. string
    b. long integer
    c. double float
    d. float
    e. character
21.
    a. Valid

b. Valid

c. Not valid – starts with digit

d. Not valid – starts with digit

e. Not valid – '#' is not a valid character to use in an identifier.

22.

a. Not valid – Hyphen is not a valid character to use in an identifier

b. Not valid – an identifier may not contain spaces

c. Valid

d. Valid

e. Valid

23.

```
---------------

First
Example
:   10
, w is Y

z is     5.12
---------------
```

24. The following lines must be changed to read as follows:

Line 2:

```
int main (void)
```

25. The following lines must be changed to read as follows:

Line 1:

```
#include <stdio.h>
```

Line 4:

```
printf ("Hello World");
```

Last line:

```
}
```

26. The following lines must be changed to read as follows:

Line 1:

```
 #include <stdio.h>
```

Line 4:

```
printf ("We are to learn correct");
```

Line 5:

```
printf ("C language here");
```

27. The following lines must be changed to read as follows:

Before *main*:

```
#include <stdio.h>
```

Line 7:

```
int   a;
```

Line 8:

```
float b;
```

Line 9:

```
char  c;
```

28. The following lines must be changed to read as follows:

Before *main*:

```
#include <stdio.h>
```

Line 7:

```
int    a;
```

Line 8:

```
double b;
```

Line 9: (Note: We Recommned Only One Definition Per Line)

```
char   c;
char   d;
```

29. The following lines must be changed to read as follows:

Line 7: (Note: We Recommned Only One Definition Per Line).

```
int    a;
```

Line 8:

```
char   b;
char   c;
char   d;
```

Line 9: d cannot be declared twice

```
double e;
double f;
```

Problems

30.

a. `char  option;`

b. `int   sum     = 0;`

c. `float product = 1.0;`

31.

a. `short code;`

b. `#define salesTax .0825`

– or –

```
const double salesTax .0825;
```

c. `double sum = 0.0;`

32.

```
     printf("The sales total is: $%10.2f\n", cost);
```

33. See Program 2-1.

Program 2-1 Solution to problem 33

```
/* This program uses four print statements.
      Written by:
      Date:
*/
#include <stdio.h>

int main (void)
{
// Statements
   printf ("******\n");
   printf ("******\n");
   printf ("******\n");
   printf ("******\n");
   return 0;
}  // main
```

34. See Program 2-2

Program 2-2 Solution to problem 34

```
/* This program uses four print statements.
      Written by:
      Date:
*/
```

Program 2-2 Solution to problem 34

```
#include <stdio.h>

int main (void)
{
// Statements
   printf ("*\n");
   printf ("**\n");
   printf ("***\n");
   printf ("****\n");
   return 0;
}  // main
```

35. See Program 2-3.

Program 2-3 Solution to problem 35

```
/* This program uses three types of  constants.
      Written by:
      Date:
*/
#include <stdio.h>

#define A 'a'
#define E 'e'
#define I 'i'
#define O 'o'
#define U 'u'

int main (void)
{
// Local definitions
   const int even0 = 0;
   const int even2 = 2;
   const int even4 = 4;
   const int even6 = 6;
   const int even8 = 8;

// Statements
   printf ("%3c%3c%3c%3c%3c\n", A, E, I, O, U);
   printf ("%3d%3d%3d%3d%3d\n",
           even0, even2, even4, even6, even8);
   printf ("%3d%3d%3d%3d%3d\n", 1, 3, 5, 7, 9);
   return 0;
}  // end of main
```

36. See Program 2-4

Program 2-4 Solution to problem 36

```
/* This program compares the decimal conversion code to
   the float conversion code.
      Written by:
      Date:
*/
#include <stdio.h>

int main (void)
{
// Local Definitions
   int a = 1;
   int b = 10;
   int c = 100;
   int d = 1000;
   int e = 10000;
```

Program 2-4 Solution to problem 36

```
// Statements
   printf ("%d %d %d %d %d\n", a, b, c, d, e);
   printf ("%f %f %f %f %f\n", a, b, c, d, e);
   return 0;
}  // end of main
```

The results of running the program are shown below. The first line prints correctly because the data type (integer) matches the format conversion code (%d). The second line is incorrect because the data type does not match the format conversion code (%f).

(Note: you may get different results for the second line depending on the computer and compiler you use):

```
Results:
int d = 1000;
int e = 10000;
   1 10 100 1000 10000
   0.000000 0.000000 0.000000 0.000000 0.000000
```

37. See Program 2-5

Program 2-5 Solution to problem 37

```
/* This program demonstrates the use of scanf and printf
      Written by:
      Date:
*/
#include <stdio.h>

int main (void)
{
// Local Definitions
   int   quantity;
   float unitPrice;


// Statements
   printf("\nEnter quantity & price (XXX XXX.XX): ");
   scanf ("%d %f", &quantity, &unitPrice);

   printf("\nQuantity   : %6d\n", quantity);
   printf("Unit Price : %6.2f\n", unitPrice);
   return 0;
}  // end of main
```

Note: Depending on your computer and compiler, you may get different results.

38. See Program 2-6

Program 2-6 Solution to problem 38

```
/* This program prints an integer using different
   conversion codes: character, decimal and float.
      Written by:
      Date:
*/
#include <stdio.h>

int main (void)
{
```

Program 2-6 Solution to problem 38

```
// Local Definitions
   int num;

// Statements
   printf("\nEnter an integer: ");
   scanf ("%d", &num);


   printf("The number as a character: %c\n", num);
   printf("The number as a decimal  : %d\n", num);
   printf("The number as a float    : %f\n", num);
   return 0;
}  // end of main
```