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Assignment Questions-3 (Answers)

1. A C program contains the following declarations and initial assignments:

int i= 8, j = 5;

float x = 0.005, y = -0.01;

char c = 'c', d = Id';

Determine the value of each of the following expressions. Use the values initially assigned to the variables for each expression.

(a) (3*i-2* j)%(2*d-c) **= 14**

(b) 2 * ((i / 5) + (4 * (j - 3)) % (i + j - 2)) **= 18**

c) (i-3*j)%(c+2*d) / (x-y) **= -466.666687**

d) -(i + j) **= -13**

e) ++I **= 9**

f) i++ **= 8**

g) – j **= -5**

h) 5 * (i + j) > 'c' **= 0**

i) (2*x+ y) == 0 **= 1**

j) 2*x+ (y== 0) **= 0.01**

k) (i > 0) && (j < 5) **= 0**

l) (x > y) && (i > 0) || (j < 5) **= 1**

m) (x > y) && (i > 0) && (j < 5) **= 0**

2) Interpret the meaning of the control string in each of the following scanf functions.

(a) scanf("%l2ld %5hd %151f %151en, &a, &b, &c, &d);

ANSWER:

- ***a- A long decimal integer with field width 5.***
- ***b-A short decimal integer with field width 15.***
- ***c- A long double with field width 5.***
- ***d- double with field width 15.***

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(b) scanf ("%101x %6ho %5hu %141um, &a, &b, &c, &d);

ANSWER:

- ***a- A Hexadecimal value with field width 10.***
- ***b-A short Octal value with field width 6.***
- ***c- Short unsigned value with field width 6.***
- ***d- Long unsigned value with field width 14.***

(c) scanf("12D %hd %15f %15e", &a, &b, &c, &d);

ANSWER:

- ***a- Decimal value with field width 12.***
- ***b- A short decimal value.***
- ***c- Float value with field width 12.***
- ***d-Float, with scientific notation with field width 12.***

(d) scanf("8d %*d %121f %121fu, &a, &b, &c, &d);

ANSWER:

- ***a- Decimal value with field width 8.***
- ***b- A decimal value.***
- ***c- Long double value with field width 12.***
- ***d-Long double with field width 12.***

3) A C program contains the following statements: #include <stdio. h>

int i,j, k;

Write an appropriate scanf function to enter numerical values for i, j and k into the computer, assuming

(a) The values for i,j and k will be decimal integers not exceeding six characters each.

(b) The value for i will be a decimal integer, j an octal integer and k a hexadecimal integer, with each quantity not exceeding 8 characters.

(c) The values for i and j will be hexadecimal integers and k will be an octal integer. Each quantity will be 7 or fewer characters.

ANSWER:

a. ***scanf("%6d %6d %6d", &i, &j, &k);***
b. ***scanf("%8d %8o %8x",&i, &j, &k);***
c. ***scanf("%7x %7x %7o", &i, &j, &k);***

4) A C program contains the following statements:

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```
#include<stdio.h>

char text[80];
```

Write a scanf function that will allow a string to be read into the computer and assigned to the character array text. Assume that the string does not contain any whitespace characters.

ANSWER:

scanf("%s", text);

5) A C program contains the following statements.

```
#include<stdio.h>

char a, b, c;
```

Suppose that $ is to be entered into the computer and assigned to a, * assigned to b and @ assigned to c. Show how the input data must be entered for each of the following scanf functions.

(a) scanf ("%c%c%c", &a, &b, &c) ;

(b) scanf("%c %c %c', &a, &b, &c);

(c) scanf("%s%s%s", &a, &b, &c);

(d) scanf("%s %s %s", &a, &b, &c);

(e) scanf ("%ls%ls%ls", &a, &b, &c);

ANSWER:

a . $ * @
b. $ * @
c. $ * @
d. $ * @
e. $*@

6) A C program contains the following array declaration.

char text[80];

Suppose that the following string has been assigned to text.

Programming with C can be a challenging creative activity.

Show the output resulting from the following printf statements.

(a) printf ("%s", text) ;

b) printf ("%18.7s", text) ;

c) printf ("%18s", text) ;

(d) printf("%-18.7s", text);

(e) printf (“%. 18s", text) ;

ANSWER:

a . Programming with C can be a challenging creative activity.
b. Program
c. Programming with C can be a challenging creative activity.
d. Program (with white spaces)
e. Programming with C

7) Write the necessary scanf or printf statements for each of the following situations.

(a) Generate the message Please enter your name: Then enter the name on the same line. Assign the name to a character-type array called name.

ANSWER:

```
char name[20];
printf(“Please enter your name:”);
scanf(“%s”,&name);
```

(b) Suppose that xl and x2 are floating-point variables whose values are 8.0 and -2.5, respectively. Display the values of xl and x2, with appropriate labels; i.e.,

generate the message xl = 8.0 x2 = -2.5

ANSWER:

```
printf(“x1=%f x2=%f”,x1, x2);
```

(c) Suppose that a and b are integer variables. Prompt the user for input values of these two variables, then display their sum. Label the output accordingly.

ANSWER:

```
printf(“Enter a and b:”);
scanf(“%d%d”,&a,&b);
printf(“a+b=%d”, a+b);
```

8) Write a loop that will examine each character in a character-type array called text, and write out the ASCII equivalent (i.e, the numerical value) of each character. Assume that the number of characters in the array is specified in advance by the integer variable n. Write the loop three different ways.

(a) Using a while statement.

ANSWER:

```
int i=0;
while(i<n)
{
```

```
printf("%d",int(text[i]));
i++;
}
```

(b) Using a do - while statement.

ANSWER:

```
int i=0;
do{
printf("%d",int(text[i]));
i++;
}while(i<n);
```

(c) Using a for statement.

ANSWER:

```
for(int i=0; i<n; i++)
{ printf("%d",int(text[i])); }
```

9) Write a loop that will calculate the sum of every third integer, beginning with i=2 (i.e calculate the sum 2 + 5 + 8 + 11 + -) for all values of i that are less than 100. Write the loop three different ways.

(a) Using a while statement.

ANSWER:

```
int sum=0,i=2;
while(i<100){
sum+=i; i+=3;
}
```

(b) Using a do - while statement.

ANSWER:

```
int sum=0,i=2;
do{
sum+=i;
i+=3;
}while(i<100);
```

(c) Using a for statement.

ANSWER:

```
int sum=0;
for(int i=2;i<100;i+=3)
{ sum+=i; }
```

10) Write a switch statement that will examine the value of an integer variable called flag and print one of the following messages, depending on the value assigned to flag.

(a) HOT, if flag has a value of 1

(b) LUKE WARM, if flag has a value of 2

(c) COLD, if flag has a value of 3

(d) OUT OF RANGE if flag has any other value

ANSWER:

```
switch(flag) {
case 1: { printf("HOT"); break; }
case 2: { printf("LUKE WARM"); break; }
case 3: { printf("COLD"); break; }
default: { printf("OUT OF RANGE"); break; }
}
```