Chapter 4 Exercises

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**Q 1**

Making a decision between two alternative courses of action is usually implemented with a(n) \_\_\_\_\_\_\_\_ statement in C.

**if and else statement**

**Q 2**

Trace the following program fragment;

indicate which function will be called if a data value of 27.34 is entered.

printf("Enter a temperature> ");

scanf("%lf", &temp);

if (temp > 32.0) not\_freezing();

else ice\_forming();

**The function ice\_forming(); will be called**

**Q 3**

Write a multiple-alternative if statement to display a message indicating the educational level of a student based on the student’s number of years of schooling

(0, none; 1–5, elementary school; 6–8, middle school; 9–12, high school; more than 12, college).

Print a message to indicate bad data as well.

//Prints None if the user has 0 years of schooling

if (numSchool == 0)

{

printf ("None - There's no Educational level");

}

//Prints Elementary school if the user has 1-5 years of schooling

else if (numSchool >= 1 && numSchool <= 5)

{

printf ("\\nYou're at a Elementary school level");

}

//Prints Middle school if the user has 6-8years of schooling

else if (numSchool >= 6 && numSchool <= 8)

{

printf ("\\nYou're at a Middle school level");

}

//Prints High school if the user has between 9 - 12 years of schooling

else if (numSchool >= 9 && numSchool <= 12)

{

printf ("\\nYou're at a High school level");

}

//Prints you're in college if the user has

else if (numSchool > 12)

{

printf ("\\nYou're at a College level");

}

//Prints Bad data

else

{

printf ("Whoops, Bad data.\\nCheck your input");

}

return 0;

}

**Q 4**

Write a switch statement to select an operation based on the value of inventory.

Increment total\_paper by paper\_order if inventory is 'B' or 'C' ; Increment total\_ribbon by ribbon\_order if inventory is 'E' , 'F' , or 'D' ; increment total\_label by label\_order if inventory is 'A' or 'X' .

Do nothing if inventory is 'M' .

Display an error message if the value of inventory is not one of these eight letters.

switch (inventoryValue)

{

//Check if inventory value is equal to B or C

//If it is, increment total\_paper by paper\_order

case 'B':

case 'C':

total\_paper += paper\_order;

break;

//Check if inventory value is equal to E, F or D

//If it is, increment total\_ribbon by ribbon\_order

case 'E':

case 'F':

case 'D':

total\_ribbon += ribbon\_order;

break;

//Check if inventory value is equal to A or X

//If it is, increment total\_label by label\_order

case 'A':

case 'X':

total\_label += label\_order;

break;

//Check if inventory value is equal to M

//If it is, do nothing

case 'M':

break;

default:

printf ("\\nInvalid Input\\nPlease use one of these letters (A,B,C,D,E,F,M,X)");

break;

}

**Q 5**

Write an if statement that displays an acceptance message for an astronaut candidate if the person’s weight is between the values of opt\_min and opt\_max inclusive, the person’s age is between age\_min and age\_max inclusive, and the person is a nonsmoker ( smoker is false).

if (userWeight >= opt\_min && userWeight <= opt\_max)

{

if (userAge >= age\_min && userAge <= age\_max)

{

if (Smoker == 0)

{

printf ("\\nCongratulations!!!\\nYou are accepted to be an astronaut\\n\\n");

}

else

{

printf ("Sorry, You are not accepted");

}

}

else

{

printf ("Sorry, You are not accepted");

}

}

else

{

printf ("Sorry, You are not accepted");

}

**Q 6**

Implement the flow diagram in Fig. 4.14 using a nested if structure.

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//Checks if the user is older than 59

if (userAge > 59)

{

//Checks if sts is equal to W

if (sts == 'W')

{

printf("\\nWorking senior\\n");

}

//Prints Retired senior if sts is not equal to W

else

{

printf("\\nRetired senior\\n");

}

}

else

{

//checks if user is younger than 59 but older than 20

//Then prints Adult

if (userAge > 20 && userAge < 59)

{

printf("\\nAdult\\n");

}

else

{

//checks if user is younger than 20 but older than 12

//Then prints Teenager

if (userAge > 12 && userAge < 20)

{

printf("\\nTeen\\n");

}

//Prints Child if user is younger than 12

else

{

printf("\\nChild\\n");

}

}

}