CS 1713, Spring 1998, Practice with `if-else` in C, Wed Jan 21 1998, Page 1 of 2

The following program segments attempt to calculate a fee based on number of passengers according to the schedule given in the table. Determine which segments (if any) correctly compute the value.

passengers	fee
< 2	$100
2 – 10	$300
11 – 20	$500
> 20	$1000

```
------------------------------
fee = 100.0;
if (passengers > 20)
   fee = 1000.0;
if (passengers > 10)
   fee = 500.0;
if (passengers >= 2)
   fee = 300.0;
------------------------------
fee = 100.0;
if (passengers >= 2)
   fee = fee + 200.0;
if (passengers > 10)
   fee = fee + 400.0;
if (passengers > 20)
   fee = fee + 900.0;
------------------------------
```

```
fee = 100.0;
if (passengers >= 2)
   fee = fee + 200.0;
else if (passengers > 10)
   fee = fee + 400.0;
else if (passengers > 20)
   fee = fee + 900;
------------------------------
fee = 100.0;
if (passengers >= 2)
   if (passengers >= 10)
      if (passengers >= 20)
         fee = fee + 900.0;
      else
         fee = fee + 400.0;
   else
      fee = fee + 200.0;
------------------------------
fee = 1000;
if (passengers < 20)
   fee = 500.0;
if (passengers < 10)
   fee = 300.0;
if (passengers < 2)
   fee = 100.0;
------------------------------
fee = 100.0;
if (2 <= passengers &&
      passengers <= 10)
   fee = 300.0;
else if (10 < passengers &&
      passengers <= 20)
   fee = 500.0;
else fee = 1000.0;
------------------------------
```

```
runner% cat quad0.c
/* quad: determine the quadrant of an input pair */
#include <stdio.h>

int main(void)
{
   double x, y;
   int q;
   scanf("%lf %lf", &x, &y);
   /*-------------------------------*/
   /* First Method: Straight if-else-else */
   if (x == 0 || y == 0) q = 0;
   else if (x > 0 && y > 0) q = 1;
   else if (x > 0 && y < 0) q = 4;
   else if (x < 0 && y > 0) q = 2;
   else if (x < 0 && y < 0) q = 3;
   printf("First Method:  ");
   if (q == 0) printf("On an axis\n");
   else printf("Quadrant %i\n", q);
   /*-------------------------------*/
   /* Second Method: Nested if_else */
   if (x == 0 || y == 0) q = 0;
   else if (x > 0) {
      if (y > 0) q = 1;
      else if (y < 0) q = 4;
   }
   else if (x < 0) {
      if (y > 0) q = 2;
      else if (y < 0) q = 3;
   }
   printf("Second Method: ");
   if (q == 0) printf("On an axis\n");
   else printf("Quadrant %i\n", q);
   /*-------------------------------*/
   /* Third Method: Shortened version */
   if (x == 0 || y == 0) q = 0;
   else if (x > 0) {
      if (y > 0) q = 1;
      else q = 4;
   }
   else {
      if (y > 0) q = 2;
      else q = 3;
   }
   printf("Third Method:  ");
   if (q == 0) printf("On an axis\n");
   else printf("Quadrant %i\n", q);
   return 0;
}
```

```
runner% lint -m -u quad0.c

function returns value which is always ignored
    printf              scanf
runner% cc -o quad0 quad0.c
runner% quad0
1 2
First Method:  Quadrant 1
Second Method: Quadrant 1
Third Method:  Quadrant 1
runner% quad0
-1 3
First Method:  Quadrant 2
Second Method: Quadrant 2
Third Method:  Quadrant 2
runner% quad0
3 -2
First Method:  Quadrant 4
Second Method: Quadrant 4
Third Method:  Quadrant 4
runner% quad0
-1 -4
First Method:  Quadrant 3
Second Method: Quadrant 3
Third Method:  Quadrant 3
runner% quad0
0 4
First Method:  On an axis
Second Method: On an axis
Third Method:  On an axis
runner% quad0
-2 0
First Method:  On an axis
Second Method: On an axis
Third Method:  On an axis
runner% quad0
0 0
First Method:  On an axis
Second Method: On an axis
Third Method:  On an axis
```