Patuakhali Science and
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Course CIT 111

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Assignment : 03
Title : Chapter 6 solution
(theory)

MULTIPLE CHOICE QUESTIONS.

6.1 Nesting is allowed for which of the following statements?

(a) If (b) If else (c) switch (d) All of the above

Ans: (d) All of the above

6.2 What will be the output of the following if-else statement?

```
if (x=5)
printf("condition is true\n");
else
printf ("Condition is false");
```

Ans: (b) x is assigned to the value 5 and 'string 'Condition is true printed'.

6.3 For the following if-else construct,

```
if (x%3==0 && x%7==0)
printf("True");
else
printf("False");
```

Ans: (b) True if 5<=a<=10, false otherwise

6.4 For the following if-else construct?

```
if (x%3 == 0 && x%2=0)
printf("True");
else
printf("Falee")
```

Ans: (a) True if the given positive integer x is a

6.5 What will be the output of the following program

```
main()
{
x=5;
if (x==5);
printf("Hello World");
else
printf("I am in else block");
}
```

Ans: (d) Compiler gives syntax error and the program is not executed.

REVIEW QUESTIONS

6.1 (a) A switch expression can be of any type [False]

(b) A program stops its execution when a break statement is encountered. [False]

(c) Each case label can have only one statement [False]

(d) The default case is required in the switch statement. [False]

(e) When if statements are nested, the last else gets associated with the nearest if without an else. [True]

(f) One if can have more than one & else clause. [False]

(g) Each expression in the else if must test the same variable. [False]

(h) A switch statement can always be replaced by a series of if.... else statements. [True]

(i) Any expression can be used for the if expression. [True]

(j) The predicate !((x >= 100)||(y == 5)) is equivalent to (x < 10) && (y != 5). [True]

(k) It is mandatory to include an else block while using an if statement. [False]

(l) The default block can be placed at the beginning of the switch case cosnstruct. [True]

6.2 (a) The && (AND) operator is true only when both the operands are true.

(b) Multiway selection can be accomplished using an else if statement or the switch-case statement.

(c) The break statement when executed in a switch statement causes immediate exit from the structure.

(d) The expression !(x != y) can be replaced by the expression x == y .

(e) The ternary conditional expression using the operator ?: could be easily coded using if-else statement.

(f) The ?: operator is used to build two-way decision-making statement that returns one of the two values based on the result of the expression.

(g) The goto statement is used to branch unconditionally from one point to another in a C program.

6.3. The following is a segment of a program

```
x = 1;
y = 1;
if (x > 0)
    x = x+1;
    y = y-1;
printf(" %d %d", x, y);
```

what will be the values of x and y if x assumes a value of (a) 1 and (b) 0

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Ans: (a) if n=1 then, value of n will be 2 and y will be 2.

(b) if n=0 then, value of n will be 1 and y will be 2.

6.4 Rewrite each of the following without using compound relations:

(a) if (grade <= 59 && grade >= 50)
second = second + 1;

Ans: if (grade <= 59)
if (grade >= 50)
second = second + 1;

(b) if (number > 100 || number < 0)
printf("Out of range");
else
sum = sum + number;

Ans: if (number > 100)
printf("Out of range");
else if (number < 0)
printf("Out of range");
else
sum = sum + number;

(e) if ((M1 > 60) && M2 > 60) || T > 200)
printf ("Admitted \n");
else
printf ("Not admitted \n");

Ans:
```
if (M1 > 60)
{ if (M2 > 60)
    printf ("Admitted \n");}
else if (T > 200)
  printf ("Admitted \n");
else
  printf ("Not admitted \n");
```

6.5 Assuming x = 10, state wheather the following logical expressions are true or false.

(a) x == 10 && x > 10 && !x [Ans: False].

(b) x == 10 || x > 10 && !x [Ans: True]

(c) x == 10 && x > 10 || !x [Ans: False]

(d) x == 10 || x > 10 || !x [Ans: True]

6.6 Find errors, if any, in the following switch related statements. Assume that the variables x and y are of int type and x = 1 and y = 2

(a) switch (y);

Ans: switch (y)

(b) ease 10;

Ans: case 10:

(d) switch (x) { case 2 : y = x+y; break; }

6.7 Simplify the following compound logical expressions

(a) ! (x<= 10)

(b) ! (x==10) || !((y == 5)|| (z<0))

(c) ! ((x+y == z) && ! (z >5))

(d) !((x<=5) && (y == 10) && (z <5))

Ans:

(a) x > 10

(b) (x != 10) || (y != 5 && z >=0)

(c) (x + y != z) || (z > 5)

(d) (x >5) || (y != 10) || (z >= 5)

6.8 Assuming that x = 5, y = 0, and z = 1 . initially, what will be their values after executing those,

(a) if (x && y)
x = 10;
else
y = 10;

Ans: x= 5, y= 10, z = 1

(b) if (x || y || z)
    y = 10;
  else
    z = 0;

Ans:
x = 5
y = 10
z = 1

(c) if (x)
    if (y)
      z = 10;
  else
    z = 0;

Ans:
x = 5
y = 0
z = 0

(d) if (x == 0 || x && y)
    if (!y)
      z = 0;
  else
    y = 1;

Ans:
x = 5
y = 10
z = 1

6.9 Assuming that x=2, y=1 and z=0 initially, what will be the values after executing the following code segments?

(a) switch (x)
  {
    case 2:
      x = 1;
      y = x+1;
    case 1:
      x = 0;
      break;
    default:
      x = 1
      y = 0 }

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Ans: (a) x = 0 , y = 0 , z = 1

(b) switch (y)
{
case 0:
x = 0;
y = 0;
case 1:
x = 2;
z = 2;
default:
x = 1;
y = 2;
}

Ans: (a) x = 1 , (b) y = 2 , (c) z = 2

6.10 What is the output of the following program?

```
main()
{
    int m = 5;
    if (m < 3) printf("%d", m+1);
    else if (m<5) printf("%d", m+2);
    else if (m<7) printf("%d", m+3);
    else printf("%d", m+4);
}
```

Ans: 8

6.11 What is the output of the following program?

```
main ( )
{
    int m = 1;
    if ( m == 1)
    {
      printf ("Delhi");
      if (m == 2)
      printf ("Chennai");
      else
      printf ("Banglore");
    }
   else;
   printf (" END");
}
```

Ans: Delhi Banglore END

6.12

```
main()
{
   int m;
   for (m = 1; m < 5; m++)
      printf ("%d \n", (m % 2) ? m : m * 2);
}
```

Ans:

1
4
3
8

6.13 What is the output of the following program?

```
main()
{
    int m, n, p;
    for (m=0; m<3; m++)
    for (n=0; n<3; n++)
    for (p=0; p<3; p++)
    if (m+n+p == 2)
    goto print;

    print:
    printf ("%d, %d, %d", m, n, p);
}
```

Ans: 0, 0, 2

6.14 What will be the value of x when the following segment is executed?

```
int x = 10, y = 15;
x = (x<y) ? (y+x) : (y-x);
```

Ans: 25

6.15 What will be the output when the following is executed

```
int n = 0;
if (n>=0)
if (n>0)
printf ("Number is positive");
else printf (" Number is negative");
```

Ans: Number is negative

6.16 What will be the output when the following segment is executed?

```
char ch = 'a';
switch (ch)
{
  case 'a':
  printf ("A");
  case 'b':
  printf ("B");
  default:
  printf ("C");
}
```

Ans: ABC

6.17 What will be the output of the following segment when executed?

```
int x = 10, y = 20;
if ( (x<y) || (x+5) > 10)
printf ("%d", x);
else
printf ("%d", y);
```

Ans: 10

6.18 What will be output of the following segment when executed?

```
int a = 10, b = 5;
if (a > b)
{
    if (b> 5)
    printf ("%d", b);
}
else
    printf ("%d", a);
```

Ans: Nothing will be printed

DEBUGGING EXERCISES

6.1 Find errors, if any, in each of the following segments:

(a) `if (x+y = z && y >0)`
`printf (" ");`

Ans: `if (x+y == z && y>0)`
we have to use '==' instead of " = "

(b) `if (p<0) || (q<0)`
`printf ("sign is negative");`

Ans: We have to put parenthesis around the condition
`if ((p<0) || (q<0))`

(c) `if (code > 1);`
`a = b+c`
`else a =0`

Ans: Semicolon missing
`a`

`if (code>1) a = b+c ;`
`else a=0 ;`

6.2 Find the errors, if any, in the following statements

(a)
```
if (x >= 10) then
printf ("\n");
```

Ans: then word is not recommended

```
if (x >= 10)
printf ("\n");
```

(b)
```
if x >= 10
printf ("OK");
```

Ans: We have to use parenthesis around condition

```
if (x >= 10)
printf ("OK");
```

(c)
```
if (x = 10)
printf ("Good");
```

Ans: '=' is used for assignment, while '==' is used for comparing

```
if (x == 10)
printf ("Good");
```

(d)
```
if (x =< 10)
printf ("Welcome");
```

Ans: Correct order of condition is "<="

```
if (x <= 10)
printf ("Welcome");
```

INTERVIEW QUESTIONS

6.1 Till how many levels can nested blocks be created in C?

Ans: In C programming the maximum limit depends on the stack size of a program.

6.2 What happens if the conditinal expression is missing in an if statement?

Ans: If conditional expression missing in a if statement, compiler will throw an error.

6.3 What is the purpose of goto statement?

Ans: Goto statement can jump from one position to an another position.

6.4 What will be the output

```
void main()
{
int a=5;
if (a<0);
printf ("a is negative");
 else
printf ("a is positive");
}
```

Ans: expected expression error because of ; after if

6.5 What could be the if expressions that always return true and false? Ans: 1 and 0

6.6 What types of values are permitted to be used with a switch? Ans: int or char