

Indian Institute of Technology Mandi  
IC150: Computation for Engineering  
Tutorial 1 **Solutions**

1. Fill in the blanks:

- a) A leading 0 (zero) on an integer constant means Octal.
- b) The escape sequence '\t' represents One tab space.
- c) Enumerations provide an alternative to #define.
- d) The ^, <<, >>, % operator cannot be applied to a float or double.

2. Choose the right answer(s)

(a) The break statement is used to exit from:

- 1. an **if** statement
- 2. a **for** loop
- 3. a program
- 4. the **main()** function

**Ans:** 2. a **for** loop

(b) A do-while loop is useful when we want that the statements within the loop must be executed:

- 1. Only once
- 2. At least once
- 3. More than once
- 4. None of the above

**Ans:** 2. At least once

3. Which of the following statements is false?

- (1) Each new C instruction has to be written on a separate line
- (2) Usually all C statements are entered in lower case letters
- (3) Blank spaces may be inserted between two words in a C statement
- (4) Blank spaces cannot be inserted within a variable name

**Ans:** 1. Each new C instruction has to be written on a separate line

4. Do the indicated conversions of C constants:

- (a) 0707 to decimal **455**
- (b) 10100101b to hex and decimal **hex-A5, decimal-165**
- (c) 0xfd to octal and binary **octal-375, binary-11111101**
- (d) 395 to octal and hex **octal-613, hex-18B**

5. Write the equivalent using while:

```
for(i=0; i<10; i++)
{
    do something;
}
```

**Ans:**

```
i=0;
while(i<10)
{
    do something;
    i++;
}
```

6. What do these loops print?

```
for(i = 0; i < 10; i = i + 2)
    printf("%d\n", i);
```

**Ans:**

0  
2  
4  
6  
8

```
for(i = 100; i >= 0; i = i - 10)
    printf("%d\n", i);
```

**Ans:**

100  
90  
80  
70  
60  
50  
40  
30  
20  
10  
0

```
for(i = 2; i < 100; i = i * 2)
    printf("%d\n", i);
```

Ans:

2  
4  
8  
16  
32  
64

7. What is the value contained by pi after the code is executed?

```
double i;  
int pi;  
i=3.14159;  
pi=i;
```

Ans: 3

8. What will be the output of the following?

```
int main()  
{  
    float a=2, b=1.5, c=12.5 ;  
    int s ;  
    s = a * b * c / 100 + 32 / 4 - 3 * 1.1 ;  
    printf("%d\n", s);  
}
```

Ans: 5

9. Point out the errors, if any, in the following program:

```
int main( )  
{  
    float a=12.25, b=12.52;  
    if ( a = b )  
        printf ("a and b are equal \n" );  
}
```

Ans: (1) if ( a == b) (2) main function should be closed with }

10. If a = 10, b = 12, c = 0, find the values of the following expressions:

(1) a != 6 && b > 5    Ans:1

(2) a == 9 || b < 3    Ans:0

(3) !( a < 10 )        Ans:1

(4) !( a > 5 && c )    Ans:1

(5) 5 && c != 8 || !c   Ans:1

11. What is the output of:

```
int main( )  
{  
    int x=4,y,z;  
    y = --x;  
    z = x--;  
    printf("%d%d%d\n", x, y, z);  
}
```

Ans: 233

12. Print the output of the program below:

```
int main()  
{  
    int arr[10];  
    int i;  
    for (i=0;i<10;i++)  
        arr[i]=0;  
  
    i=5;  
    arr[i]=i++;  
    printf("%d %d %d \n", arr[5], i, arr[i]);  
}
```

Ans: 5 6 0

13. What is the output of this program?

```
int main()  
{  
    int x=1;  
    while (x == 1)  
    {  
        x=x-1;  
        printf("%d\n", x);  
    }  
}
```

Ans: 0

14. Print the output of the following program (a) when index = 0 and (b) when index = 1

```
switch (index)  
{  
    case 0:  
        printf("Customers are dicey\n"); break;  
    case 1:  
        printf("Markets are pricey\n");  
    case 2:  
        printf("Investors are moody\n");  
    case 3:  
        printf("At least employees are good\n");  
    default:  
        printf("Index is not valid\n");  
}
```

Ans:

- (a) Customers are dicey  
(b) Markets are pricey  
Investors are moody  
At least employees are good  
Index is not valid

15. What is printed by the following C code?

```
i = 0x12a4;
printf("%u, %hu, %hhu\n", i, i, i);
```

Ans: 4772 4772 164

16. Write a program to print all the ASCII values and their equivalent characters using a while loop. The ASCII values vary from 0 to 255.

```
#include <stdio.h>
int main()
{
    int i;
    for (i = 0; i < 256; i++)
        printf("%d %c \n", i, i);
}
```

17. Two strings are declared using: `char s1[MAXLEN], s2[MAXLEN];` where MAXLEN is a constant. Write C code to copy only the contents of s1 to s2. Assume that s1 contains a valid C string. Do not use any string functions from

string.h.

```
#include <stdio.h>
#define MAXLEN 20
int main()
{
    int i;
    char s1[MAXLEN] = "Computation";
    char s2[MAXLEN] = "";

    printf("s1 = %s; s2 = %s\n", s1, s2);

    for(i=0; s1[i]!='\0'; i++)
        s2[i] = s1[i];
    s2[i] = '\0';

    printf("s1 = %s; s2 = %s\n", s1, s2);
}
```