BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI (RAJ.)

II Semester 2017-18 CS F111 Computer Programming COURSE QUIZ #1

B

18-Feb-2018 35 minutes 15 marks (7.5%)

SOLUTIONS

For questions 1 through 4, pick all correct answers: **[4 x 1 = 4]**

1. Which of the following array declarations is legal, and also initializes all elements to zero?

A. `int arr[] = {0};` **B.** `float arr[5] = { 0.0, 0.0 };`

C. `char arr[] = "\0";` D. `double arr[20];` E. `long long int arr[];`

2. Which of these are meaningful when typed in the command mode of the vi editor?

A. `set nu` (to set line numbers) **B.** `5dd` **C.** `x` **D.** `i` **E.** `w`

3. In Unix, the output of one command can be received as the input of another command by using what is known as piping (indicated by the symbol |). So, *command 1* | *command 2* will pass the output of the first Unix command to the second Unix command, directly. Consider the following piped command sequence: `who | wc -l`. This counts and displays the number of users that are logged into the system. Which of these four alternatives also accomplish the same objective? (Note: Semicolon (;) is used to execute two commands sequentially in shell.)

A. `who > temp.txt ; wc -l < temp.txt` B. `who < temp.txt ; wc -l < temp.txt`

C. `who < temp.txt ; wc -l > temp.txt` D. `who > temp.txt ; wc -l > temp.txt`

4. Study the following segment of code and then pick the right choice(s):

```
int ch, arr[10];  for (i = 0; i < 10; ++i) arr[i] = 0;
while ((ch = getchar()) != EOF)    if (ch >= '0' && ch <= '9') ++arr[ch-'0'];
```

A. It counts the number of digits found in the input and stores in the first element of the array.

B. It counts the number of times the digits 0 and 9 occur in the given input.

C. It stores the count of each of the ten digits in the corresponding element of the array.

D. It generates a compile-time error because the array index cannot be an expression.

E. It selectively counts only the occurrences of numeric characters of the given input.

Write the answers for questions 5 through 11 in the indicated space: **[7 x 1 = 7]**

5. Find the value of p, where p represents the base of the number system: $(13)_p / (2)_p = (5)_p$

7

6.
```
int i = 7; float f = 0.5; char ch = 'B';
printf("%ld\n", sizeof((f < 2.0) || (i > 10) && (ch == 'A')));
```
4

7. `char name[] = "Hari\n"; printf("%ld\n", sizeof(name))` **6**

8.
```
int a = 0, b = 0, x;  x = 777 || a = ++b; printf("%d %d %d\n", a, b, x);
```

What will be the output of the segment of code given above? If it results in an error, explain.

Compilation error. Because the logical operator || takes precedence over the assignment operator, the expression will be interpreted as `x = ((777 || a) = (++b));` and would be equivalent to `x = (1 = 1);` which is erroneous, for an integer constant cannot be on the left side of an assignment expression.

9. How many * gets printed? `unsigned char c = 1; while (c++) putchar('*');` **255**

10. `int i = 5; a = (a = i++, a++, a++); printf("%d\n", a);` **6**

11. What will be the output of the following segment of code? If it results in an error, explain why.

```
int i = 0;
switch (i)
{
   case '0':    printf("Zero\n"); break;
   default :    printf("No match\n");
   case '1':    printf("One\n");
}
```

No match
One
The first case label evaluates to 48 (and not 0), the ASCII value of '0'. Hence, control shifts to default, prints the message, and then falls through.

For questions 12 through 19, from among the multiple choices given, pick and indicate the most appropriate answer: **[8 x ½ = 4]**

12. Consider the following variable declarations and definitions in C

int var_9 = 1; int 9_var = 2; int _var = 3;

A. Only the first statement is valid.
B. Both the first and third are valid, but not the second.
C. Neither the first nor the third is valid; the second is.
D. All the three are valid.
E. Neither of these three is valid.

13. Typing what on the keyboard signals EOF for a command sequence such as `cat > f1.txt` ?

A. \0 B. <control>C C. <Return> **D. <control>D** E. None of these

14. In vi editor, what should be typed in command line mode to quit a file after saving it?

A. dd **B. wq** C. q! D. q E. q!!

15. Which of these commands can take an object file and then produce a runnable executable?

A. gcc B. gcc –E C. gcc –c D. gcc –S E. None of these.

16. Consider the piece of code `for (i = 1, sum = 0; i <= 5; i++) sum += i * i;`

A. It computes the sum of squares of the 5 numbers input by the user.
B. It involves a post-test loop.
C. It goes into an infinite loop.
D. It produces the same output as that of summing up the first 10 natural numbers.
E. None of these statements describe the task accomplished by the given code fragment.

17. The binary representation of the decimal number 9.125 is:

A. 1001.001 B. 1001.01 C. 1001.0001 D. 1011.001 E. 1011.0011

18. Consider the following loop, and identify the equivalent loop from among the options:

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

A. `i = 100; while (i-- ! = 0) printf("%d\n", i);`
B. `i = 100; do { printf("%d\n", i); i--; } while (i != 0);`
C. `for ( i = 100 ; i == 0  ; --i) printf("%d\n", i);`
D. All of the three options are valid.
E. Neither of the three options A, B and C is a valid equivalent.

19. Which of the following statement obtains the remainder on dividing 5.5 by 3 in C?

A. 5.5 % 3 B. 5.5 / 3 C. 3 % 5.5 D. 3 / 5.5 **E. None of these.**