01. Declaring a variable means some memory is allocated and that memory can be accessed by the variable name.
02. What is a valid identifier name?
    - must start with a letter or underscore (_)
    - may contain any combination of letters, digits and underscore (_)
    - must not be a C reserved word
    - Some compilers allow more than 31 characters, while others do not. To be safe, we avoid using more than 31 characters.
03. What does ASCII stand for?
04. Registers are the fastest memory type.
05. Von Neumann architecture refers to "stored-program computers".
06. The higher the level of programming language, the closer to the human languages and the further from native machine languages.
07. Example for a syntactical error: return statement missing
    Example for a semantic error: infinite iteration
08. Can an identifier in your program **be the same as a keyword**, or **any function** name that you wrote or that is in the standard library?
09. C has four primitive data types: int, char, float and double.
    - We can use all of the bits available to store the value of a variable:unsigned short, unsigned int, unsigned long, unsigned long long.
    - With unsigned variables, there is no need for a negative-value encoding scheme.
10. What are **local variables**, **formal parameters**, and **global variables**?
11. What do the following specifiers mean?
    Type Modifiers: signed, unsigned, long, short.
    Access Modifiers: const, volatile.
    Storage Class Specifiers: auto, extern, static, register.
12. Must all variables appearing within a C program be declared?
13. Give some examples about variable declarations and initializations.
14. Counter variable is used frequently when writing programs involving loops.
15. goto is not a fundamental kind of constructs in C programming language.
16. The while loop can be written as a for loop.
17. The evaluation order of logical operators is: ! || &&
18 y = (int) (x + 0.5); rounds off x, a float, to an int value.
19. k = x+ rand( )%y; statement would create a random number in the range of [x, x+y-1] (inclusive), thus value n = a + rand() % (b + 1 - a); falls in the interval [a,b].
20. getchar and scanf functions are buffered input types. The getchar() function after accepting a character and wait for the Enter key to be pressed.
21. Is the following code legal?
    a – b = 6;
22. int a [8] = { 0, 1, 2, 3 };
    The above declaration explicitly initializes first four elements of the variable a. The remaining elements are initialized to zero(0).
23. The difference between arrays and pointers: Pointers are used to manipulate data using the address. Arrays are subscripted variables to access and manipulate data. An array is group of elements, which are of the same size and data type and have the same name.
24. char name[31]; scanf("%[a-zA-Z0-9]", name);
    Accepts only lower case letters (in the range between 'a' and 'z') upper case letters (in the range between 'A' and 'Z') and digits (in the range '0' to '9')
25. What are function prototype and function definition?
26. Once the function ends, the control is returned back to the calling function and execution continues from the statement immediately after the function call.
27. How do you include a header file in a C source file?

28. What is the maximum number that can be printed using printf("%d\n", x); assuming that x is of short int type, which is 16 bits in size?
29. What are the proper declarations for variables a, b and c in the code below?
    a = getchar(); b = getch(); c = getche();
30. The precedence of operators is Arithmetic, Comparison, Logical.
31. How can you insert comments in your program?
32. Explain the meaning of ||, |, && and & operators.
33. By what type do you should pass the actual arguments to a function if you want the change inside the function does not affect the original value of an argument variable?
34. What is the address operator?
35. What operator is used to give a value stored at a certain address in memory?
36. What is a valid return statement, can this return an array or multiple values?
37. We call a module highly coupled if it shares its tasks with some other module including the referring module.
38. If a C-program completes executing successfully, the function main should return 0 value.
39. What process changes the program code written in C to the code that can be understood by the machine?
40. Evaluate the following as true or false: !(1 &&0 || !1)&&(0 || !1)
41. When does the code block following while(x<50) execute?
42. What are differences between while(i++<100) and while(++i<100) ? What are the outputs of the following code sneppets?

```
int k = 9; //(1)
while(++k<10) k++;
printf("\nk = %d\n",k);

int k = 9; //(2)
while(k++<10) k++;
printf("\nk = %d\n",k);
```

43. Which are loop structures in C?
44. What statement is required to avoid falling through from one case to the next when you use the switch statement?
45. What keyword covers unhandled possibilities in switch statement?
46. Can the while loop be written as a for loop?
47. What statement is used to exit from loops?
48. What statement is used to ignore the remaining part of the current loop?
49. Explain the difference between a do-while loop and while loop.
50. Give an example and explain why running recursive functions sometimes exhausts the memory stack space before the calculation completes.
51. What character is a string (one-dimensional array of characters) terminated by?
52. What is the largest subscript of an array if it has n elements?
53. How can you access the values of an array (one and multi dimensional arrays)?
54. Example for correct function prototype to pass an array of string to function:
    void foo (char name[][31], int a);
55. strcat() adds one string to the end of another.
56. What is the output when the following statement is executed?
    printf("%d %f %o %x %e\n",18,18.0,18,18,18.0);
57. Which format specifier of the printf() function indicates to print a double value in decimal notation, left aligned in a 30-character field, to four (4) digits of precision?
58. According to the Standard C specification, what are the respective minimum sizes (in bytes) of the int and long data types?

59. What is the output when the following statement is executed: printf(" %f \n",-5e4);
60. What value will x contain in the statement: int x = 0111 | 0x101;
61. If a program contains just one function, then what function is that?
62. Is using exit() always the same as using return?
63. What size is double data type?
64. When C = A && B evaluates to true?
65. If the program completes executing successfully, what value should the function main() return?
66. What are calling and called functions, how do these processes work?
67. Can a loop counter be float, which means that statement like
    for(float i = 0; i<100; i++) {/*do something*/}
    is valid?
68. In a while loop, the body of the loop is executed before or after the condition is tested?
69. Explain the use of the **if**….**else** statement.
70. What is the output when the following statement is executed: printf("%d %d\n",0111,0x101);
71. Explain the use of functions: getc(), fgetc(), putc(), fputc(), getchar(), fgetchar(). (What are their return datatype, their parameters...)
72. The Open Source is a linear model that progresses from ideas to maintenance, step by step.
73. The Waterfall model model is an incremental, hierarchical model.
74. White Box testing:
    - Internal structure is determinant(glass box, logic-driven, path-oriented).
    - Each possible path through the code is executed at least once.
    - Develop a control flow graph that represents the sequences, selections and iterations in the program. (A flow graph may contain: sequences, selections, iterations).
75. In the waterfall model, from one step we cannot go back to any step.
76. The successive steps in the waterfall model are:
    1)Concept Planning
    2)Requirements Analysis and Definition
    3)Design
    4)Coding
    5)Testing
    6)Deployment
    7)Maintenance
    8)Retirement
77. Code reading is not a part of Black Box testing.