Chapter 10 – Functions

1. To append one string to another string , _____ function is used. **[March 2020, Score 1]**

Ans. strcat ( )

2. List any four C++ mathematical functions. **[March 2020, Score 2]**

Ans. abs ( ), sqrt ( ), pow ( ) , sin ( )

3. Describe the merits of modular programming. **[March 2020, Score 3]**

Ans. a) Reduction in program size: Modular approach helps to isolate repeated task. Instructions are grouped together to form functions and is invoked by using its name. Thus, program size is reduced.

b) Less chance of error: When size of program is reduced, syntax error will be less. Modularity helps to reduce logical errors also.

c) Reduces programming complexity: Modularity helps to reduce program complexity by dividing larger programs into smaller functions.

d) Improves re-usability: Once a function is written, it can be used later. It helps to reduce development time.

4. Compare two function calling methods in C++. **[March 2020, Score 3]**

Ans.

Call by Value Method	Call by Reference Method
• Ordinary variables are used as formal parameters.	• Reference variables are used as formal parameters.
• Actual parameters may be constants, variables or expressions.	• Actual parameters will be variables only.
• The changes made in the formal arguments do not reflect in actual arguments.	• The changes made in the formal arguments do reflect in actual arguments.
• Exclusive memory allocation is required for the formal arguments.	• Memory of actual arguments is shared by formal arguments.

5. Write the syntax and use of following functions In Q++ : **[July 2019, Score 3]**

    a) strcpy ( )

    b) pow ( )

    c) islower ( )

Ans. a) strcpy( ): The strcpy( ) function is used to copy one string into another.

The syntax is: strcpy(string1,string2) ;   // Copies string2 to string 1

b) pow( ): It is used to find power of a number.

The syntax is : double pow(double int) ;

c) islower( ): This function checks if a character is in lower case or not. The function returns 1 if the character is in lower-case, and 0 otherwise.

The syntax is: int islower(char) ;

6. Differentiate between call by value and call by reference methods.   **[July 2019, Score 3]**

Ans.

Call by Value Method	Call by Reference Method
• Ordinary variables are used as formal parameters.	• Reference variables are used as formal parameters.
• Actual parameters may be constants, variables or expressions.	• Actual parameters will be variables only.
• The changes made in the formal arguments do not reflect in actual arguments.	• The changes made in the formal arguments do reflect in actual arguments.
• Exclusive memory allocation is required for the formal arguments.	• Memory of actual arguments is shared by formal arguments.

7. To find the number of characters in a string, ... function is used.   **[March 2019, Score 1]**

Ans. strlen ( )

8. To check an alphabet is lowercase, ... function can be used.   **[March 2019, Score 1]**

Ans. islower ( )

9. What do you mean by argument of a function? Explain formal arguments.

[March 2019, Score 2]

Ans. Arguments are the set of values passed to a function.

The arguments or parameters present in function definition or called function is called formal parameter.

10. Describe the merits of modular programming.   **[March 2019, Score 3]**

Ans. a) Reduction in program size: Modular approach helps to isolate repeated task. Instructions are grouped together to form functions and is invoked by using its name. Thus, program size is reduced.

b) Less chance of error: When size of program is reduced, syntax error will be less. Modularity helps to reduce logical errors also.

c) Reduces programming complexity: Modularity helps to reduce program complexity by dividing larger programs into smaller functions.

d) Improves re-usability: Once a function is written, it can be used later. It helps to reduce development time.

11. Distinguish between exit ( ) function and return statement **[July 2018, Score 3]**

Ans. exit ( ) is a built in function used to terminate a program. We must include header file cstdlib (for Geany C++) or process.h (for other versions of C++) to make use of exit ( ). return statement is used to return a value from a function to the called function. A function can return only one value. return is a keyword.

12. a) Write the names of any two header files used in C++ programs. **[July 2018, Score 1]**

b) Write the role of header files in C++ programs. **[Score 2]**

Ans. a) iostream and cmath

b) Header files are the files available along with compiler and they are kept in the standard library. The header files contain the information about functions, objects and predefined derived data types.

13. Correct the program and write the output. **[March 2018, Score 2]**

```
#include<iostream>
using namespace std;
int main ( )
{
    Char str [ ] ="Green Computing";
    int n;
    n=strlen(str);
    cout<<n;
    return 0;

}
```

Ans.
```
#include<iostream>

#include<cstring>

using namespace std;
int main ( )
{
```

```
char str [ ] ="Green Computing";
int n;
n=strlen(str);
cout<<n;
return 0;

}
```

Output is 15.

14. Explain the difference between call by value and call by reference methods with suitable examples.

[March 2018, Score 3]

Ans.

Call by Value Method	Call by Reference Method
• Ordinary variables are used as formal parameters.	• Reference variables are used as formal parameters.
• Actual parameters may be constants, variables or expressions.	• Actual parameters will be variables only.
• The changes made in the formal arguments do not reflect in actual arguments.	• The changes made in the formal arguments do reflect in actual arguments.
• Exclusive memory allocation is required for the formal arguments.	• Memory of actual arguments is shared by formal arguments.

Call by Value	Call by reference

…..
x = 10 ;
call_by_val(x) ;
………..
void call_by_val(int a)
{
    a= a * 2 ; // here a becomes 20 and x remains
}   as 10
	…..
	x = 10 ;
	call_by_ref(x) ;
	………..
	void call_by_ref(int &a)
	{
	    a= a * 2 ; ; // here a and x becomes 20
	}

15. Explain the scope of variable in a C++ program. [March 2018, Score 3]

Ans. Scope of a variable is that part of the program in which it is used. If a variable is declared within a function, then it will be available within that function only. It is said to have only local scope. And that variable is said to be a local variable.

If a variable is declared before the main function, it will be available all over the program. Then, it is said to have a global scope. And that variable is said to be global variable.

16. Which one of the following is NOT equal to others?   **[July 2017, Score 1]**

   a) pow (64, 0.5)   b) pow (2, 3)   c) sqrt (64)   d) pow (3, 2)

Ans. d) pow (3 , 2)

17. Write a recursive C++ function that returns sum of the first n natural numbers.

[July 2017, Score 2]

Ans. int recursum( )

   {

      if (n<=1)

          return n;

      else

      r   return n + recursum (n – 1);

   }

18. List any three string functions in C++ and specify the value returned by them.

[July 2017, Score 3]

Ans. i) strlen( ): The strlen( ) function is used to find the length of a string(number of characters in the string).

      The syntax is: int strlen(string);

ii) strcpy( ): The strcpy( ) function is used to copy one string into another.

The syntax is: strcpy(string1,string2) ;   // Copies string2 to string1

iii) strcat( ): The strcat( ) function is used to join (concatenate) one string to another string. The length of the resultant string is the total length of the two strings.

The syntax is: strcat(string1,string2) ;

19. Name the built – in function to check whether a character is alphanumeric or not.

[March 2017, Score 1]

Ans. isalnum()

20. Read the function definition given below. Predict the output, if the function is called as: convert (7) ;   **[March 2017, Score 2]**

    void convert (int n)

```
        {
              if ( n > 1 )
                      convert ( n/2 )
              cout<<n%2 ;
        }
```

Ans. 1 1 1

21. Explain the difference between call by value method and call by reference method with the help of examples. **[March 2017, Score 3]**

Ans.

Call by Value Method	Call by Reference Method
• Ordinary variables are used as formal parameters.	• Reference variables are used as formal parameters.
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• The changes made in the formal arguments do not reflect in actual arguments.	• The changes made in the formal arguments do reflect in actual arguments.
• Exclusive memory allocation is required for the formal arguments.	• Memory of actual arguments is shared by formal arguments.

Call by Value	Call by reference
…..	….
x = 10 ;	x = 10 ;
call_by_val(x) ;	call_by_ref(x) ;
………..	………..
void call_by_val(int a)	void call_by_ref(int &a)
{	{
a= a * 2 ; // here a becomes 20 and x remains	a= a * 2 ; ; // here a and x becomes 20
} as 10	}

22. " Arguments used in call statement are formal arguments ". State true or false.

[July 2016, Score 1]

Ans. false

23. Differentiate between string functions strcmp( ) and strcmpi( ). **[July 2016, Score 2]**

Ans. strcmp( ): The strcmp( ) function is used to compare two strings.

The syntax is: strcmp(string1,string2) ;

Compares string1 with string2.

The function returns: 0 if both strings are equal.

-ve value if string1 is alphabetically lower than string2.

+ve value if string1 is alphabetically higher than string2 .

strcmpi( ): The strcmpi( ) function is used to compare two strings ignoring cases. The function will treat both the upper case and lower case letters as same for comparison. The syntax is same as that of strcmp( ) function.

24. Explain recursive functions with the help of a suitable example.   **[July 2016, Score 3]**

Ans. **T**he process of calling a function by itself is known as recursion and the function is known as recursive function. Some of the complex algorithms can be easily simplified by using recursive functions.

```
void convert ( int n )
    {
            if ( n > 1 )
                    convert ( n/2 )
            cout<<n%2 ;
    }           // This function gives output 1  1  1 if 7 is passed as argument.
```

Here, the function convert is called by itself within its body.

25. Explain call by value and call by reference methods of function calling with the help of a suitable
example.   **[July 2016, Score 4]**

Ans.

Call by Value Method	Call by Reference Method
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Call by Value	Call by reference

…..
x = 10 ;
call_by_val(x) ;
………..
void call_by_val(int a)
{
   a= a * 2 ; // here a becomes 20 and x remains
}   as 10
	…..
	x = 10 ;
	call_by_ref(x) ;
	………..
	void call_by_ref(int &a)
	{
	   a= a * 2 ; ; // here a and x becomes 20
	}

26. Suggest most suitable built in function in C++ to perform the following tasks:

   a) To find the answer for 5^3 **[March 2016, Score 2]**

   b) To find the number of characters in the string "KERALA".

   c) To convert the character 'M' to 'm'.

   d) To get back the number 10 if the argument is 100.

Ans. a) pow( )

     b) strlen( )

     c) tolower( )

     d) sqrt ( )

27. A function calls itself for many times and returns a result.

   a) What is the name given to such a function?   **[March 2016, Score 1]**

   b) Write a function's definition of the above type to find the sum of natural numbers from 1 to N.

     (**Hint**: If the value of N is 5, the answer will be 1+2+3+4+5 =15)   **[Score 3]**

Ans. a) recursive function

     b) int recursum( )

     {

          if (n<=1)

               return n;

          else

```
r        return n + recursum ( n – 1 );

    }
```

28. …. .. function is used to copy a string to another variable.   **[July 2015, Score 1]**

Ans. strcpy( )

29. Explain two types of variables according to its scope and life.   **[July 2015, Score 2]**

Ans. According scope and there are two types of variables, local and global. If a variable is declared within a function, then it will be available within that function only. It is said to have only local scope. And that variable is said to be a local variable. If a variable is declared before the main function, it will be available all over the program. Then, it is said to have a global scope. And that variable is said to be global variable.

30. The function which calls itself is called a ……………..   **[March 2015, Score 1]**

Ans. Recursive function

31. Construct the function prototypes for the following functions.   **[March 2015, Score 2]**
   a) The function Display ( ) accepts one argument of type double and does not return any value.
   b) Total ( ) accepts two arguments of type int, float respectively and returns a float type value.

Ans. a) void Display (double) ;

   b) float Total (int, float) ;

32. Name the different methods used for passing arguments to a function. Write the difference between them with examples.   **[March 2015, score 3]**

Ans. Call by value and call by reference.

Call by Value Method	Call by Reference Method
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Call by Value	Call by reference

…..
x = 10 ;
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void call_by_val(int a)
{
   a= a * 2 ; // here a becomes 20 and x remains
}   as 10
	…..
	x = 10 ;
	call_by_ref(x) ;
	………..
	void call_by_ref(int &a)
	{
	   a= a * 2 ; ; // here a and x becomes 20
	}

****

Chapter – 11 Computer Networks

1. What is the need for computer networks?   **[March 2020, Score 3]**

   Ans.1. Resource Sharing**:** The sharing of available hardware and software resources (like programs, printers , hard disk etc.)In a computer network is called resource sharing.

   2. Reliability**:** A file can have copies in different computers. So breaking down of one system will not cause data loss.

   3. Scalability**:** Computing and storage capacity can be increased or decreased easily by adding/removing computer or storage devices to the network.

2. Explain the functions of the following Network devices: **[March 2020, Score 5]**
   (a) Modem
   (b) Switch
   (c) Gateway
   (d) Multiplexer
   (e) Router
   Ans.