University of Sargodha

B.S 1ˢᵗ Term Examination 2017

Subject: Information Technology/Software Engineering

Paper: Programming Fundamentals (CMP:2122)

Time Allowed: 2:30 Hours   **Maximum Marks: 60**

Note: Objective part is compulsory. Attempt any four questions from subjective part.

Objective Part   (Compulsory)

Q1.   Write short answers of the following in 2-3 lines on your answer sheet.   (2*12)

1. What is the purpose of default statement in switch statement?
2. Why it is variable initialization?
3. Define EOF marker?
4. What is the purpose of file pointer?
5. What is built-in function? Give example.
6. What is Run-Time Error? Give example.
7. What is Dangling Pointer?
8. Differentiate between Local and Formal parameters?
9. Which function is used to copy one string to another string?
10. What is pointer constant?
11. What is the drawback of Global variables?
12. What is the infinite loop.

Subjective Part   (4*9=36)

Note: Attempt any four questions. All questions carry equal marks.

Q2. Write down a program that reads 10 elements in an array from user. Pass the array to a method that prints the sum of given numbers.

Q3. Write down a program that accepts an integer number from user. Calculate and display its factorial by using a recursive function.

Q4. Write down a C program that prints the following pattern?

```
*    *    *    *    *
*    *    *    *
*    *    *
*    *
*
```

Q5. Write down a program that counts total number of characters in a text file.

Q6. Write a program that declares a structure Student to store rollno(int), name(string) and cgpa(float). The program defines an array to store record of five students. It inputs **five** students and then display the record of each student.

Q7. Write down a program that prompts a 4-digit number from user and reverse it. For example if user enters 2348 the program should print 8432.
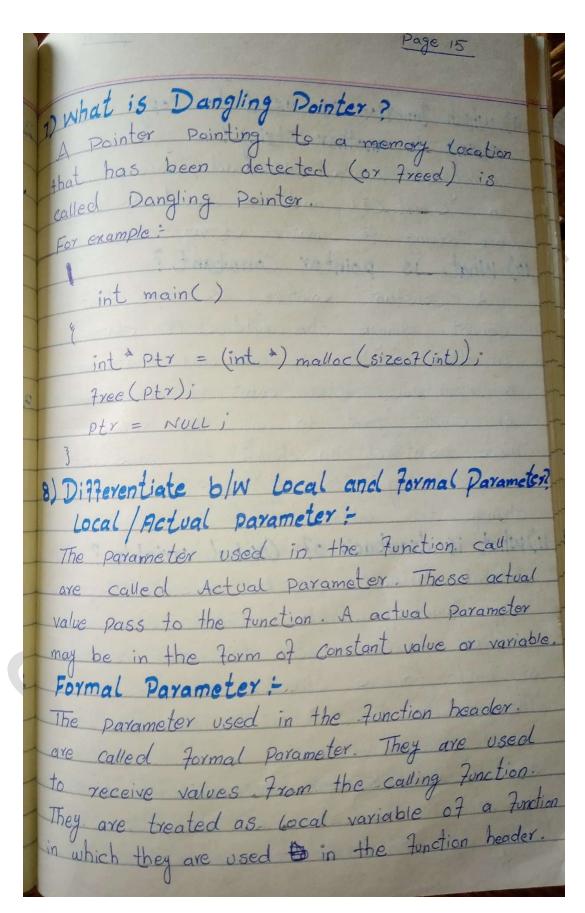
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ix) What is nested loop?

A loop within a loop is called nested loop. In nested loops, the inner loop is executed completely with each change in the value of counter variable of outer loop.

x) Differentiate b/w prefix and postfix increment operator.

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1) What is the Purpose of default Statement in Switch statement?

Default statement is used in switch statement. Default statement is executed when all the case is false. ~~then~~ for example

switch (expression)
{

    Case 1:
        statement;
    Case 2:
        stateme;
    Case 3:
        statement;
    default
    statement
}

2) Why it is variable initialization?

variable initialization is assigning a value to a variable at a time declaration. It is used when value is given in program statement.

For example value is given 10. we can declare and initialize easily.

int a; $\longrightarrow$ declaration

a = 10; $\longrightarrow$ initialization

3) Define EOF marker?

EOF stand for End of File.

EOF is a code placed by a computer after a file's last byte of data. EOF marker are helpful in data transmission and storage. File are stored in blocks, and the end marker helps the computer know it has allocated enough space to store the file.

4) What is the purpose of File Pointer?

File Pointer is a Pointer which is used to handle and keep track on the file being accessed. A new data type called "FILE" is used to declare file pointer. This data type is defined in stdio.h file.

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FILE pointer is declared as FILE > 7p. where 7p is a file Pointer.

5) What is built in a function? Give Example.

The standard library function are built-in function in C Language to handle tasks such as mathematical computations, I/o Processing, string handling etc.

These function are define in the header file.

Function	Description
isalph()	check whether character is alphabetic
isdigit()	" " " " " digit.
isspace()	" " " space.
islower()	" " " lower case.
ispunct()	" " " Punctuation.

6) What is Run-time-error? Give Example.

An Error which occur during the execution of program.

for example:-

• Logic error which Produces the wrong output.

• Division Error. which division by zero.

1) What is Dangling Pointer ?

A Pointer Pointing to a memory location that has been detected (or freed) is called Dangling Pointer.

For example :

```
int main()
{
    int * ptr = (int *) malloc(sizeof(int));
    free(ptr);
    ptr = NULL;
}
```

8) Differentiate b/w Local and Formal Parameter?

Local / Actual parameter :-

The parameter used in the function call are called Actual parameter. These actual value pass to the function. A actual parameter may be in the form of Constant value or variable.

Formal Parameter :-

The parameter used in the function header are called formal Parameter. They are used to receive values from the calling function. They are treated as local variable of a function in which they are used in the function header.

9) which function is used to copy one string to another string?

strcpy() is a standard library function in C and C++ and is used to copy one string to another string.

10) What is pointer Constant?

A constant pointer is one that cannot change the address it contain. In other words, we can say that once a constant pointer point to a variable. It cannot point to any other variable. These pointers can change the value of variable they "point to" but cannot change the address they are holding.

11) What is drawback of Global variable?

Global variable can be accessed by any function. Globel variable used when multiple function need to access the data or write to an object. The variable declared outside any function is called Global variable.

Global variable are automatically initialized to 0 at the time of declaration. They are not limited to any function.

12) What is infinite loop ?

An infinite loop in a Programming language is simply a loop definition with no terminating # condition.

For Example :

$$\text{for } (i=0; ; i++) \quad \rightarrow \text{ No Condition}$$

      {

        statement ;

      }

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Objective

(a) Evaluate the expression

$$25 * (6 + (50-48)/2) + 15$$
$$25 * (6 + (2/2)) + 15$$
$$25 * (7) + 15 \qquad \boxed{\Rightarrow 190}$$

(b) Find output

```
int var = 6;
var += 2
Printf(" The value of variable is = %d", var);
var %= 2;
Printf(" The value of variable is = %d", var);
```

Subjective

Q2. Write down a program that read 10 element in array from the user. Pass the array to a method that print the sum of given number.

```c
#include<stdio.h>
int main()
{
        int a[10],sum;
        for(int i=0; i<=9; i++)
        {
                printf("enter 10 number");
                scanf("%d",&a[i]);
                sum=sum+a[i];
        }
        printf("Total sum of array is %d",sum);
        return 0;
}
```

Q3. Write a program that accept an integer number from the user. Calculate and display its factorial by using recursive function.

```c
#include<stdio.h>
int fac(int);
int main()
{
        int n,f;
        printf("enter an integer number");
        scanf("%d",&n);
        if(n<0)
        printf("fac not found");
        else
        {
                f=fac(n);
                printf("%d!=%d",n,f);
        }
}
int fac(int n)
{
        if(n==0)
        return 1;
        else
        return n*fac(n-1);
}
```

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Q4. Write a C program that print a following pattern?

```
*       *       *       *       *
*       *       *       *
*       *       *
*       *
*
```

```c
#include<stdio.h>
int main()
{
        int i,j;
        for(i=1; i<=5; i++)
        {
                for(j=1; j<=5; j++)
                {
                        if(j<=6-i)
                        printf("*        ");
                        else
                        printf(" ");
                }
                printf("\n");
        }
        return 0;
}
```

Q7. Write down a program that prompts a 4-digit number from user and reverse it. For example if user enters 2348 the program should print 8432.

```c
#include<stdio.h>
int main()
{
        int n,rev=0,m;
        printf("enter a number");
        scanf("%d",&n);
        while(n!=0)
        {
        m=n%10;
        rev=rev*10+m;
        n=n/10;
        }
        printf("reverse number is %d",rev);
        return 0;
}
```

Sohail Nawaz

BS Software Engineer (BSSEF18M02)

Ph No: 0343-6643177

Sohail Nawaz