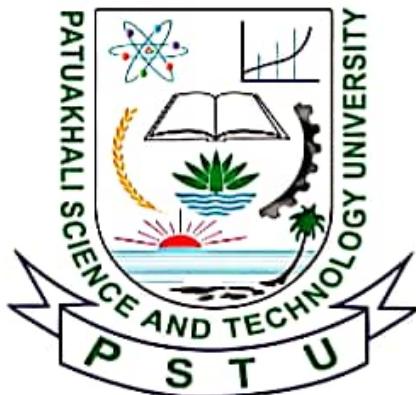


PATUAKHALI SCIENCE AND TECHNOLOGY UNIVERSITY



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Assignment no: 02, Chapter 3 Solution (Theory)

Submitted date: 25-03-2023

Multiple Choice questions

3.1 Which of the following escape sequences moves the cursor position to the new line?

Ans: '\n'

3.2 Which of the following is not a C language keyword? Ans: go

3.3 Which of the following is the correct way of specifying long signed integer data type?

Ans: Both 1 and 2.

3.4 Which of the following is not a C storage class? Ans: volatile.

3.5 Which of the following is the correct way of defining a symbolic constant?

Ans: #define MAX_MARKS 100.

3.6 Which of the following statement is true about character constants?

Ans: All of the above.

Review Questions

- 3.1 True or False:
- (a) All variables must be given a type when they are declared. (True)
 - (b) ANSI C treats the variables name and NAME to be same. (False)
 - (c) Character constants are coded using double quotes. (False)
 - (d) The keyword void is a data type in C. (True)
 - (e) Character constants are enclosed in single quotes while string constants are enclosed in double quotes. (True)
 - (f) Initialization is the process of assigning a value to a variable at the time of declaration. (True.)
 - (g) The scanf function can be used to read only one value at a time. (False)
 - (h) C allows its keywords to be also used as identifiers. (False)

- ① Auto variables are by default initialized to 0 as soon as they are declared. (True.)
- ② Floating point data constants, by default, denote float type values. (False)
- ③ Like variables, constants have a type. (True)
- ④ All static variables are automatically initialized to zero. (True)

- 3.2) Fill in the blanks.
- a) A variable can be made constant by declaring it with the qualifier constant at the time of initialization.
 - b) 255 is the largest value that an unsigned short int type variable can store.
 - c) A global variable known as external.
 - d) The keyword int can be used to create a data type identifier.

⑥ If the number 387(1234) is to be used as an unsigned long integer then it must be appended by %uld.

⑦ The largest positive integer value can be stored in long int type variable.

3.3 Trigraph character is one type of character which consists of three characters. Some key board does not support some characters. But we can use them by trigraph character.

3.4 The basic four data type are:

- (a) int
- (b) float
- (c) char
- (d) void

We cannot extend the range of character. We could extend the range of integer by using long before integer. We can extend the range of float by using double. To

extend the precision further we may use long double. Characters are usually stored in 8 bit of internal storage. The qualifier signed or unsigned may be explicitly applied to char. While unsigned chars have values between 0 and 255, signed chars have values from -128 to 127.

3.5) An unsigned constant will not have any sign mean, it will be having positive values only.

3.6) C supports some special back slash character constants, that are used in output function. These characters are known as escape sequence characters, for example "\n" stand for new line character.

Characteristic:

(i) Although it consists two characters, it represent single character.

- ⑥ Every combination starts with backslash (\).
- ⑦ They are non printing characters.
- ⑧ Each escape sequence has unique ASCII value.

Purpose:

- 2. In a program we use it for new line.
- 2. In a program we use it for horizontal tab.
- 3. We can represent any number of the execution character set by an escape sequence.

3.7/ A variable is a data name that may be used to store a data value. Unlike constant that remains unchanged during the execution of a program. A variable can take different values at different times during execution, just like character, int, double, float.

3.8/ A variable may be used to store data value. Other hand symbolic names are unique constant.

3.2/ Variable are declared at the beginning of the body but after the main. All variable must be declared before they can appear in executable statements.

Symbolic names need to be defined at the beginning of a program. A symbolic name constant is defined as follows:

```
#define SYMBOLIC_NAME
```

3.10/ An int can have short, long, signed, unsigned, unsigned short, unsigned long qualifiers at a time.

3.11/ He can put a line like before the main function in the program.

```
#define DPR double
```

From that point on, he can use DPR in place of double wherever he wants.

For example: he can write

```
DPR MY_double_variable;
```

3.12/ Enumerate is a user-defined data type provided by ANSI standard. It is defined as follows:

enum identifier{member1, member2... membern}

Declaration:

An enumeration is user-defined data type. Its members are constants that are written as identifiers, though they have signed integer values.

Advantage:

1. Enumeration helps to provide self-documenting code.
2. Enumeration helps to clarify the structure of a program.
3. Enumerated constants are generated automatically by the compiler.
4. Enumeration helps to improve the debugging capacity of a program.

Purpose of qualifier const:

We may like the value of certain variables to remain constant during the execution of a program. We can achieve this by declaring the variable with the qualifier const at the time of initialization.

```
const int class_size = 40;
```

Purpose of qualifier volatile:

ANSI standard defines qualifier volatile that can be used to tell explicitly the compiler that a variables value may be changed at any time by some external sources. For example:

```
volatile int date;
```

When dealing with very small numbers, I will like to use the qualifier short before data type int if the number is integer. Or if the number is floating point type I will use float data type.

And when dealing with very large numbers if the number is a integer, I will use the qualifier long before int. If the number is positive, integer I may use the qualifier unsigned or unsigned long. If the number is floating point type I will use data type double or use the qualifier long before double.

<u>3.15/</u>	<u>Valid constant</u>	<u>Invalid constant</u>
	0.0001	5×2.5
	00000	"15.75"
	+100	
	75.95E-2	
	-95.6	
	-1.79e+9	
	0.0001234	

<u>3.16/</u>	<u>Valid variable</u>	<u>Invalid variable</u>
	MinimumScore	First.name
	Doubles	N1+N2
	Row1	\$name
		3 rd -row
		n\$

3.17 int n, y=10;
char z='a';
 $n+y+z = ?$ (Ans:)

3.18 Distinguish Between:

(a) Global and local variables:

- Global variables are variables that are defined outside of a function and can be accessed from any part of the program.

- Local variable are variables that are defined within a function and are only accessible within that function.

(b) Initialization and assignment:

- Initialization refers to the process of giving a variable an initial value when it is declared.

- Assignment, on the other hand, is the process of assigning a new value to a variable that

has already been initialized.

④ Automated and static variable:

- Automated variables are those that are created automatically when a function is called, and destroyed automatically when the function returns.
- Static variables, on the other hand, are declared inside a function or a block of code, but their value persists even after the function or block has finished executing.

⑤ Enumerated types, also known as enums

are a user-defined data type in programming languages that consists of a set of named values, also called enumerators.

for example:

enum DaysOfWeek

Monday,

Tuesday,

Wednesday,

Thursday,

Friday,

Saturday,

Sunday

;

In this example, 'DaysOfWeek' is the name of the enum and 'Monday' one named values or enumerators within the enum type.

- ④ **TypeDef** is a keyword used in programming languages to create an alias or a new name for an existing data type. It can be used to make the code more readable and understandable by giving

descriptive names to data types.

Example :

```
typedef unsigned int :: uint;
```

INTERVIEW QUESTIONS

3.1) Yes, it is possible to declare an identifier that starts with an underscore in C or C++

3.2) Yes, it is possible to declare an identifier that ends with an underscore in C or C++.

3.3) The return type of the printf function in C or C++ is an integer which represents the number of characters printed to the output stream.

3.4 Declaring a variable means specifying its type and name, while defining a variable means allocating memory for it and providing an initial value. In other words, declaring a variable tells the compiler that the variable exists, while defining a variable initializes the variable with a value.

3.5 long long int is a data type in C and C++ that can store integers with a large range than the int data type. It typically used 64 bits of memory and can represent integers in the range of -9,223,372,036,859,775,808 to 9,223,372,036,859,775,807.

3.6 | The return type of the 'scanf' function in C is an integer value, which indicates the number of input items successfully matched and assigned.

~~Specifically~~ Specifically, 'scanf' returns the number of input items that have been successfully converted and assigned to the variables provided as arguments.