

# National University of Computer and Emerging Sciences



## Lab Manual # 8

### Programming Fundamentals

#### (Section BSE-1A)

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## Objectives

The objectives of this lab are to cover the following:

- user-defined functions (page 320 of textbook)
- parameter passing to functions by reference
- introduction to arrays

## Question No 1 (array):

Take 5 integer inputs from user and store them in an array and print them on screen.

**Example:**

### Input

Enter 5 Numbers: 1 2 3 4 5

### Output

Numbers are

1

2

3

4

5

## Question No 2 (function with nested loop):

Implement the following function in C++ that takes a number as a parameter and then displays the following output. Within the function the outer loop should be do while and inner loop should be while loop.

**void displayAlphabetSquare(int psize)**

Example:

Input: 5

Output:

A	A	A	A	A
B	B	B	B	B
C	C	C	C	C
D	D	D	D	D
E	E	E	E	E

## Question No 3 (function with parameter by reference):

Write a program in C++ (using function with parameter passed in by reference ) for a car renting business. The car rent is determined according to the following rate schedule:

- Any car rented from Monday through Friday, is billed at a rate of **Rs. 2000 per day**
- Any car rented on a Saturday or Sunday, is billed at a rate of **Rs. 3000 per day**.
- The input will consist of the day of the week and the number of days for which the car is rented. The output will be the total rent.
- The day of the week will be read as one of the following character values, which are stored in a variable of type *char*

<b>M</b>	<b>T</b>	<b>W</b>	<b>J</b>	<b>F</b>	<b>H</b>	<b>S</b>
Mon	Tue	Wed	Thu	Fri	Sat	Sun

Please allow the user to use either uppercase or lowercase letters or a combination of the two. Your program should include a loop that lets the user repeat this calculation until the user says she or he is done (by entering e.g. 'X'). You can test your program on the following inputs:

- M 7 (Monday to Friday and then Saturday and Sunday as well, rent would be 16000)
- W 4 (Wednesday to Friday and then Saturday, rent would be 9000)

- S 2 (Sunday and Monday, rent would be 5000)

The function's signature should be as follows:

```
void calculateCarRent( char day, int numOfdays, int &rent)
```

It could be called from main function as follows:

```
int main()
{
    int numOfDays, rent ;
    char dayOfWeek ;

    cout << " Enter day of the Week (type X to exit) : ";
    cin >> dayOfWeek;

    while(dayOfWeek != 'X')
    {
        cout << "Enter Number of days for which the car is rented:";
        cin>> numOfDays;
        rent=0;
        calculateCarRent(dayOfWeek, numOfDays,rent);

        cout<<"Rent was "<<rent<<endl;

        cout << " Enter day of the Week (type X to exit) : ";
        cin >> dayOfWeek;
    }
    return 0;
}
```