NUST

School of Mechanical & Manufacturing Engineering

FOP Assignment:

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Batch: ME-15

Section: A

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1.Take 10 integer inputs from user and store them in an array and print them on screen.

```cpp
#include <iostream>
using namespace std;

int main() {
  int numbers[10];2
  for (int i = 0; i < 10; i++){
    cout << "Enter a number: ";
    cin >> numbers[i];
  }
  for (int i = 0; i < 10; i++){
    cout<<numbers[i] << " ";
  }
  return 0;
}

```

```
Enter a number: 1
Enter a number: 3
Enter a number: 2
Enter a number: 4
Enter a number: 6
Enter a number: 58
Enter a number: 7
Enter a number: 8
Enter a number: 2
Enter a number: 9
1 3 2 4 6 58 7 8 2 9
--------------------------------
Process exited after 17.54 seconds with return value 0
Press any key to continue . . .
```

2. Write a program to find the sum and product of all elements of an array with 5 integer elements.

```cpp
#include <iostream>
using namespace std;

int main() {
  int arr[5];
  int sum = 0;
  int product = 1;
  cout << "Enter 5 integer elements of the array: ";
  for (int i = 0; i < 5; i++) {
    cin >> arr[i];
  }
  for (int i = 0; i < 5; i++) {
    sum += arr[i];
    product *= arr[i];
  }
  cout << "Sum of the array elements: " << sum << endl;
  cout << "Product of the array elements: " << product << endl;

  return 0;
}
```

```
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Enter 5 integer elements of the array: 1
2
3
4
5
Sum of the array elements: 15
Product of the array elements: 120

--------------------------------
Process exited after 10.64 seconds with return value 0
Press any key to continue . . .
```

3. Print a diamond pattern using a single array.

```cpp
#include <iostream>

void printDiamond(int rows) {
    // Ensure rows is an odd number
    if (rows % 2 == 0) {
        std::cout << "Please enter an odd number of rows." << std::endl;
        return;
    }

    // Calculate the midpoint of the diamond
    int midpoint = rows / 2;

    // Print the upper half of the diamond
    for (int i = 0; i <= midpoint; ++i) {
        for (int j = 0; j < rows; ++j) {
            if (j >= midpoint - i && j <= midpoint + i) {
                std::cout << "*";
            } else {
                std::cout << " ";
            }
        }
        std::cout << std::endl;
    }

    // Print the lower half of the diamond
    for (int i = midpoint - 1; i >= 0; --i) {
        for (int j = 0; j < rows; ++j) {
            if (j >= midpoint - i && j <= midpoint + i) {
                std::cout << "*";
            } else {
                std::cout << " ";
            }
        }
        std::cout << std::endl;
    }
}

int main() {
    // Example: Print a diamond with 7 rows
    printDiamond(7);

    return 0;
}
```

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


--------------------------------
Process exited after 0.1375 seconds with return value 0
Press any key to continue . . .
```