

Faculty of Computing

IT1120 – Introduction to Programming

Year 1 Semester 1 (2024)

Tutorial 07

Question 1

Write a pseudocode to input data via keyboard to an array called **myArray**. Size of the array is 5.

- a) Print the contents of the **myArray** in the reverse order you entered.
- b) Create another array called **evenArray**. Find the even numbers of array **myArray** and store them in **evenArray**.

MAIN

DEFINE myArray[5] **AS INTEGER**

DEFINE evenArray[5] **AS INTEGER**

DEFINE index, evenIndex **AS INTEGER**

// Input data into myArray

FOR index = 0 **TO** 4

PRINT "Enter element ", index + 1, ":"

INPUT myArray[index]

 index = index + 1

NEXT

```
// Print myArray in reverse order
```

```
PRINT "Contents of myArray in reverse order:"
```

```
FOR index = 4 TO 0
```

```
    PRINT myArray[index]
```

```
    index = index - 1
```

```
NEXT
```

```
// Find even numbers and store them in evenArray
```

```
evenIndex = 0
```

```
FOR index = 0 TO 4
```

```
    IF myArray[index] % 2 == 0 THEN
```

```
        evenArray[evenIndex] = myArray[index]
```

```
        evenIndex = evenIndex + 1
```

```
    ENDIF
```

```
    index = index + 1
```

```
NEXT
```

```
// Print evenArray
```

```
PRINT "Contents of evenArray (even numbers from myArray):"
```

```
FOR index = 0 TO evenIndex - 1
```

```
    PRINT evenArray[index]
```

```
    index = index + 1
```

```
NEXT
```

```
ENDMAIN
```

Question 2

Write a pseudocode to add the content of array A and B and store it in a new array called C.

int A[5] = 10, 20, 30, 40, 50;

int B[5] = 34, 67, 12, 89, 12;

int C[5];

Calculate A+B and store in Array C

MAIN

DEFINE A[5] = {10, 20, 30, 40, 50} **AS INTEGER**

DEFINE B[5] = {34, 67, 12, 89, 12} **AS INTEGER**

DEFINE C[5] **AS INTEGER**

DEFINE index **AS INTEGER**

// Calculate A + B and store in C

FOR index = 0 **TO** 4

 C[index] = A[index] + B[index]

 index = index + 1

NEXT

// Print the contents of array C

PRINT "Contents of array C (A + B):"

FOR index = 0 **TO** 4

PRINT C[index]

 index = index + 1

NEXT

ENDMAIN

Question 3

- a) Write a pseudocode to create an integer array of size 10.

Input numbers from the keyboard and store 10 positive numbers in the array.

If a negative number is entered display an error message.

Note: A total of 10 positive numbers should be stored in the array

MAIN

DEFINE myArray[10] **AS INTEGER**

DEFINE count **AS INTEGER**

DEFINE number **AS INTEGER**

count = 0

// Input 10 positive numbers

WHILE count < 10

PRINT "Enter a positive number:"

INPUT number

IF number < 0 **THEN**

PRINT "Error: Negative numbers are not allowed."

ELSE

 myArray[count] = number

 count = count + 1

ENDIF

ENDWHILE

```
// Print the contents of myArray
```

```
PRINT "Contents of myArray:"
```

```
FOR index = 0 TO 9
```

```
    PRINT myArray[index]
```

```
    index = index + 1
```

```
NEXT
```

```
ENDMAIN
```

b) Modify the above pseudocode to read the array and find the maximum number

MAIN

DEFINE myArray[10] **AS INTEGER**

DEFINE count **AS INTEGER**

DEFINE number **AS INTEGER**

DEFINE maxNumber **AS INTEGER**

DEFINE index **AS INTEGER**

count = 0

// Input 10 positive numbers

WHILE count < 10

PRINT "Enter a positive number:"

INPUT number

IF number < 0 **THEN**

PRINT "Error: Negative numbers are not allowed."

ELSE

 myArray[count] = number

 count = count + 1

ENDIF

ENDWHILE


```
// Initialize maxNumber to the first element of the array
```

```
maxNumber = myArray[0]
```

```
// Find the maximum number
```

```
FOR index = 1 TO 9
```

```
    IF myArray[index] > maxNumber THEN
```

```
        maxNumber = myArray[index]
```

```
    ENDIF
```

```
    index = index + 1
```

```
NEXT
```

```
// Print the contents of myArray
```

```
PRINT "Contents of myArray:"
```

```
FOR index = 0 TO 9
```

```
    PRINT myArray[index]
```

```
    index = index + 1
```

```
NEXT
```

```
// Print the maximum number
```

```
PRINT "The maximum number is: ", maxNumber
```

```
ENDMAIN
```

Question 4

- a) Write a pseudocode to insert registration IDs of 12 students and store in an array called 'students'. Assume that the registration ID is an integer.

MAIN

DEFINE students[12] **AS INTEGER**

DEFINE index **AS INTEGER**

DEFINE regID **AS INTEGER**

// Input registration IDs for 12 students

FOR index = 0 **TO** 11

PRINT "Enter registration ID for student ", index + 1, ":"

INPUT regID

students[index] = regID

index = index + 1

NEXT

// Print the contents of the students array

PRINT "Registration IDs of the students:"

FOR index = 0 **TO** 11

PRINT students[index]

index = index + 1

NEXT

ENDMAIN

- b) You are asked to modify the pseudocode to find whether a student is available in the array when the student ID is entered from the keyboard.

Display message "Student is available" if the student is found, otherwise display "Student is not available".

MAIN

DEFINE students[12] **AS INTEGER**

DEFINE index **AS INTEGER**

DEFINE regID **AS INTEGER**

DEFINE searchID **AS INTEGER**

DEFINE found **AS BOOLEAN**

// Input registration IDs for 12 students

FOR index = 0 **TO** 11

PRINT "Enter registration ID for student ", index + 1, ":"

INPUT regID

 students[index] = regID

 index = index + 1

NEXT

// Input the student ID to search

PRINT "Enter the student ID to search:"

INPUT searchID

```
// Initialize found to FALSE
found = FALSE

// Search for the student ID in the array
FOR index = 0 TO 11
    IF students[index] = searchID THEN
        found = TRUE
        BREAK
    ENDIF
    index = index + 1
NEXT

// Check if student is found
IF found = TRUE THEN
    PRINT "Student is available"
ELSE
    PRINT "Student is not available"
ENDIF

ENDMAIN
```