PROGRAMMING BASICS

1) Algorithm and flow chart for finding second largest number in an array

- Start
- Declare variables n, Largest, second_largest , array[n]
- Read n
- Read the array elements
- Initialize largest = array[0] , second_largest = array[1] , i = 1
- Repeat the following steps till i < n :
    1. If array[i] is greater than Largest, set second_largest to L:argest and Largest to array[i]
    2. Else if array[i] is greater than second_largest, set second_largest to array[i]
- Print second_largest
- Stop

```
                    ┌─────────────┐
                    │    Start    │
                    └──────┬──────┘
                           │
                    ╱──────▼──────╲
                   ╱    Read n     ╲
                   ╲               ╱
                    ╲─────┬───────╱
                          │
                   ╱──────▼────────╲
                  ╱   Read array     ╲
                  ╲    elements      ╱
                   ╲─────┬──────────╱
                         │
              ┌──────────▼──────────┐
              │ Largest = array[0], │
              │Second_largest = array[1],│
              │        i=1          │
              └──────────┬──────────┘
                         │
    false          ◇────▼────◇         true
  ┌──────────────  │   i<n    │  ───────────────┐
  │                ◇─────────◇                   │
  │                     ▲                        │
┌─▼──────────┐          │                  ◇─────▼─────◇
│   Print    │          │                 ╱  array[i]   ╲        false
│second_largest│        │                 │  > largest   │  ──────────────┐
└─────┬──────┘          │                 ╲             ╱                  │
      │                 │                  ◇─────┬─────◇                   │
 ┌────▼────┐            │                        │ true            ◇──────▼──────◇
 │  Stop   │            │                 ┌──────▼──────┐          ╱ array[i] >    ╲   true
 └─────────┘            │                 │Second_largest =│       │  second_l      │ ──────┐
                        │                 │  Largest,    │         ╲   argest       ╱       │
                        │                 │Largest = array[i],│     ◇──────┬──────◇         │
                        │                 │  i =i + 1   │            false │        ┌────────▼────────┐
                        │                 └─────────────┘                  │        │Second_largest = │
                        │                                                  │        │   array[i],     │
                        │                                                  │        │   i = i+ 1      │
                        │                                            ┌─────▼─────┐  └─────────────────┘
                        └────────────────────────────────────────── │  i = i+ 1 │
                                                                     └───────────┘
```