## Implementation (Insertion Sort)

$$\begin{array}{ccccc} 0 & 1 & 2 & 3 & 4 \\ 9, & 5, & 1, & 4, & 3 \end{array} \qquad i = 1 \text{ to } 4$$

$$i = 1 \qquad \text{Key} = 5$$

Key = arr[i]

True

$$J = 0$$

$$5 < 9$$

True

| 0 | 1 |
|---|---|
| 5 | ~~9~~ ~~9~~ 9 |

while    $J >= 0$ && $\text{key} < arr(J)$

$$arr(J+1) = arr(J)$$

$$J = -1 \Leftarrow J = J - 1$$

$$arr(J+1) = key$$

| 0 | 1 | 2 |
|---|---|---|
| ~~5~~1 | ~~9~~~~5~~ | ~~1~~ 9 |

$$i = 2$$

$$key = 1 \qquad 1 < 5$$

True

$$J = ~~1~~~~0~~ -1$$

True

$$1 < 9$$

while    $J >= 0$ and $key < arr(J)$

| 0 | 1 | 2 |
|---|---|---|
| 1 | 5 | 9 |

$$arr(J+1) = arr(J)$$

$$J = J - 1$$

$$arr(J+1) = key$$