

```
/*increase key operation*/
```

```
#include <stdio.h>
```

```
int n = 0;
```

```
void increase_key(int arr[], int id, int key);
```

```
int main() {
```

```
    int i, arr[20], id=0, key=0; //taking an empty array of size 20
```

```
    printf("Enter the array size (the array is an array representation of a heap): "); //so, heap size = arr size
```

```
    scanf("%d", &n);
```

```
    printf("Enter the array elements:\n");
```

```
    for (i = 0; i < n; i++) {
```

```
        scanf("%d", &arr[i]);
```

```
    }
```

```
    printf("the array (heap) is: ");
```

```
    for (i = 0; i < n; i++) {
```

```
        printf("%d ", arr[i]);
```

```
    }
```

```
    printf("\n");
```

```
    printf("enter the index of the element to be increased: ");
```

```
    scanf("%d", &id);
```

```
    printf("\nenter the key (increased val): ");
```

```
    scanf("%d", &key);
```

```
    printf("\n");
```

```
    increase_key(arr, id, key);
```

```
    printf("the heap after increase key operation: ");
```

```
    for (i = 0; i < n; i++) {
```

```
        printf("%d ", arr[i]);
```

```
    }
```

```

    return 0;
}

void increase_key(int arr[], int id, int key) {
    if (arr[id] > key) {
        printf("ERROR: node value already greater than key");
        return;
    }
    arr[id] = key;
    while (id > 0 && arr[(id - 1) / 2] < arr[id]) {
        int temp = arr[(id - 1) / 2];
        arr[(id - 1) / 2] = arr[id];
        arr[id] = temp;
        id = (id - 1) / 2;
    }
}
}

```

The screenshot shows a Windows terminal window with the following text:

```

C:\Users\HP\OneDrive\Desktop >
Enter the array size (the array is an array representation of a heap): 8
Enter the array elements:
20
15
18
10
13
14
12
7
the array (heap) is: 20 15 18 10 13 14 12 7
enter the index of the element to be increased: 4
enter the key (increased val): 31
the heap after increase key operation: 31 20 18 10 15 14 12 7
-----
Process exited after 27.71 seconds with return value 0
Press any key to continue . . .

```

The terminal window has a title bar with the path "C:\Users\HP\OneDrive\Desktop" and standard Windows window controls. The taskbar at the bottom shows various application icons and the system clock indicating 12:54 on 24-09-2023.