

**BBM 201 Data Structures
Hacettepe University**

Lecture 4: Review of Dynamic Memory: Realloc

Resource:

Lecture Videos

www.mycodeschool.com/videos/pointers-and-arrays

Realloc

To modify the size of a memory block (to double, to reduce the size etc.), we use *REALLOC*.

```
int main()
{
    int n;
    printf("Enter size of array\n");
    scanf("%d",&n);
    int *A = (int*)malloc(n*sizeof(int)); //dynamically allocated array
    for(int i =0;i<n;i++)
    {
        A[i] = i+1;
    }
    int *B = (int*)realloc(A, 2*n*sizeof(int));
    for(int i = 0; i<n; i++)
    {
        printf("%d ",A[i]);
    }
}
```

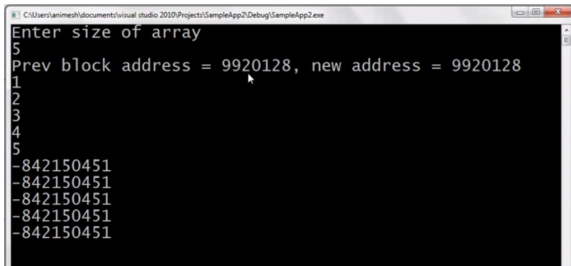
- *Realloc*, extends the old memory if possible. Otherwise, it finds a new memory block to copy the content of A.
- As input, we pass the pointer A and the size of the new memory block.

Double the array size

```
int main()
{
    int n;
    printf("Enter size of array\n");
    scanf("%d",&n);
    int *A = (int*)malloc(n*sizeof(int)); //dynamically allocated array
    for(int i =0;i<n;i++)
    {
        A[i] = i+1;
    }
    int *B = (int*)realloc(A, 2*n*sizeof(int));
    printf("Prev block address = %d, new address = %d\n",A,B);
    for(int i = 0;i<2*n;i++)
    {
        printf("%d\n",B[i]);
    }
}
```

Double the array size

```
int main()
{
    int n;
    printf("Enter size of array\n");
    scanf("%d",&n);
    int *A = (int*)malloc(n*sizeof(int)); //dynamically allocated array
    for(int i =0;i<n;i++)
    {
        A[i] = i+1;
    }
    int *B = (int*)realloc(A, 2*n*sizeof(int));
    printf("Prev block address = %d, new address = %d\n",A,B);
    for(int i = 0;i<2*n;i++)
    {
        printf("%d\n",B[i]);
    }
}
```



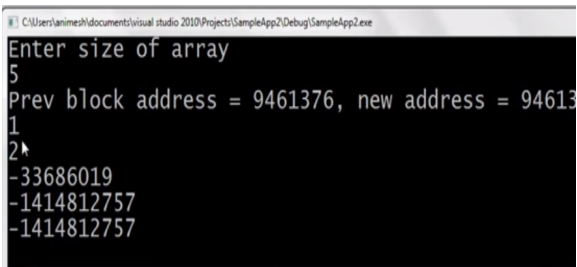
```
C:\Users\animesh\documents\visual studio 2010\Project1\SampleApp2\Debug\SampleApp2.exe
Enter size of array
5
Prev block address = 9920128, new address = 9920128
1
2
3
4
5
-842150451
-842150451
-842150451
-842150451
-842150451
```

Reduce the array size by half

```
int main()
{
    int n;
    printf("Enter size of array\n");
    scanf("%d",&n);
    int *A = (int*)malloc(n*sizeof(int)); //dynamically allocated array
    for(int i =0;i<n;i++)
    {
        A[i] = i+1;
    }
    int *B = (int*)realloc(A, (n/2)*sizeof(int));
    printf("Prev block address = %d, new address = %d\n",A,B);
    for(int i = 0;i<n;i++) | I
    {
        printf("%d\n",B[i]);
    }
}
```

Reduce the array size by half

```
int main()
{
    int n;
    printf("Enter size of array\n");
    scanf("%d",&n);
    int *A = (int*)malloc(n*sizeof(int)); //dynamically allocated array
    for(int i =0;i<n;i++)
    {
        A[i] = i+1;
    }
    int *B = (int*)realloc(A, (n/2)*sizeof(int));
    printf("Prev block address = %d, new address = %d\n",A,B);
    for(int i = 0;i<n;i++) | I
    {
        printf("%d\n",B[i]);
    }
}
```



```
C:\Users\animesh\documents\visual studio 2010\Projects\SampleApp2\Debug\SampleApp2.exe
Enter size of array
5
Prev block address = 9461376, new address = 9461376
1
2
-33686019
-1414812757
-1414812757
```