CS F111: Computer Programming

(Second Semester 2021-22)

Lect 27: Free(), Memory Leak,etc

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Free()

```c

#include <stdio.h>
#include<stdlib.h>

int main()
{
    int n, i, *ptr;
    printf("Enter total number of values: ");
    scanf("%d",&n);
    ptr=(int*)malloc(n*sizeof(int));
    for(i=0;i<n;i++)
    {
        scanf("%d", (ptr+i));
    }
    free(ptr);
    printf("Entered values are: ");
    for(i=0;i<n;i++)
    {
        printf("%d ",*(ptr+i));
    }
    //free(ptr);
    return 0;
}

```

```
Enter total number of values: 5
1 2 3 4 5
Entered values are: 0 0 -1238372336 21950 5

...Program finished with exit code 0
Press ENTER to exit console.
```

```c

#include <stdio.h>
#include<stdlib.h>

int *display()
{
    int i, *ptr;
    ptr=(int*)malloc(3*sizeof(int));
    for(i=0;i<3;i++)
    {
        scanf("%d", (ptr+i));
    }
    return ptr;
}

int main()
{
    int i, *ptr1;

    ptr1=display();

    //free(ptr);
    printf("Entered values are: ");
    for(i=0;i<3;i++)
    {
        printf("%d ",*(ptr1+i));
    }
    free(ptr1);

    return 0;
}

```

```
1 3 5
Entered values are: 1 3 5

...Program finished with exit code 0
Press ENTER to exit console.
```

Memory Leak in C

Due to improper use of DMA in the heap section.

```
clude<stdio.h>
clude<stdlib.h>

main()


int ch=1;
int *ptr;
while(ch<50)
{
    printf("Memory Leak\n");
    ptr=(int*)malloc(40000*sizeof(int));

    printf("Continue? press 1 for continu
    scanf("%d",&ch);
}
```

Dangling Pointer

```c
#include <stdio.h>
#include<stdlib.h>
int main()
{
    int *ptr=(int*)malloc(sizeof(int));
    *ptr=10;
    printf("%d\n",*ptr);
    free(ptr);

    printf("%d\n",*ptr);
    return 0;
}
```

```
10
0


...Program finished with exit code 0
Press ENTER to exit console.
```

Wild Pointer