INF212
ALGORITHMS AND PROGRAMMING LABORATORY LEAFLET
STUDENT VERSION

LABORATORY-5: Structures and Memory Allocation

Task	Explanation
1a	How to define, initialize structure and reach elements of structure
1b	How to define a pointer to a structure.
2	Create memory for int using dynamic memory allocation
3	Structure and memory allocation usage
4	Structure and function usage

Task 1a: Write the code that prints the age, ID number and salary information of two employee on the screen. Implement it using structure.

Task 1b: Write a code that requests the student's name, id, midterm and final grade. Calculate average note of student and print. Implement it using pointer and structure.

Review:

Function	Use of Function
malloc()	Allocates requested size of bytes and returns a pointer first byte of allocated space
calloc()	Allocates space for an array elements, initializes to zero and then returns a pointer to memory
free()	deallocate the previously allocated space
realloc()	Change the size of previously allocated space

Syntax of Functions

malloc()

```
void *malloc(size_t nbyte)
```

```
int* ptr = (int*) malloc(100 * sizeof(int));
```

calloc()

```
void *calloc(size_t nblock, size_t block_size);
```

```
float* ptr = (float*) calloc(25, sizeof(float));
```

realloc()

```
void *realloc(void *block, size_t newSize);
```

```
ptr = (int*) realloc(ptr, 100 * sizeof(int));
```

free()

```
free(ptr);
```

Task 2: C program to create memory for int using malloc(), calloc() and realloc()and print the content

Task 3: Write a code that requests the student's name, number and GPA (Grade Points Average) and print. Implement it using structure, pointer and malloc(). (limit to three students)

Task 4: Request the real and imaginary parts of a complex number separately from the user, add the complex numbers and print. Implement it using structure and function (request two complex numbers respectively)

ABOUT LEAFLET

This leaflet has been prepared for the laboratory of INF212 Algorithms and Programming course given at Gebze Technical University, Electronics Engineering Department.

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