24 Lecture - CS201

Important Subjective

1. **What is dynamic memory allocation?**
   Answer: Dynamic memory allocation is the process of allocating memory to a program during runtime. In C programming, it is done using functions like malloc(), calloc(), and realloc().

2. **What is the difference between stack memory and heap memory?**
   Answer: Stack memory is allocated during compile time, whereas heap memory is allocated during runtime. Stack memory is limited in size and is used for static memory allocation, while heap memory is used for dynamic memory allocation.

3. **What is the purpose of the malloc() function in C programming?**
   Answer: The malloc() function is used to dynamically allocate memory to a program during runtime.

4. **What is a memory leak?**
   Answer: A memory leak is a situation where memory that has been allocated is not properly deallocated, leading to the gradual depletion of available memory.

5. **What is the purpose of the calloc() function in C programming?**
   Answer: The calloc() function is used to dynamically allocate memory to a program during runtime, and it initializes the memory to 0.

6. **What is the purpose of the free() function in C programming?**
   Answer: The free() function is used to deallocate memory that has been allocated using malloc(), calloc(), or realloc().

7. **What is the potential danger of not properly deallocating memory in a program?**
   Answer: The potential danger is that memory leaks can occur, causing the program to eventually run out of available memory.

8. **What is memory fragmentation?**
   Answer: Memory fragmentation is a situation where the available memory becomes fragmented and is no longer contiguous, making it difficult to allocate large blocks of memory.

9. **What is the purpose of the realloc() function in C programming?**
   Answer: The realloc() function is used to resize an existing block of memory that has been allocated using malloc(), calloc(), or realloc().

10. **What is the maximum amount of memory that can be allocated using malloc() in C programming?**
    Answer: The maximum amount of memory that can be allocated using malloc() depends on the system and available memory, but it is typically limited to a few gigabytes.