CS 303 - Lab 6
October 16, 2019 (take home only)
Maximum Points: 30

Note:

- Submission deadline - 11:00 PM, October 23, 2019.
- Your submission will have two files - 1 file with answers to questions 1 to 4, and another file with the Q5 program. Include your entry number in the names of both files. Upload a zipped folder on Moodle. Ensure that your zipped folder contains the necessary files, as you will get one chance to upload.

Q1. (6 points) Do some research online and in your own words, explain the memory management scheme employed by Android. Limit your answer to 150 words.

Q2. (3 points) Most systems allow a program to allocate more memory to its address space during execution. Allocation of data in the heap segments of programs is an example of such allocated memory. What is required to support dynamic memory allocation in the following schemes?
a. Contiguous memory allocation
b. Paging

Q3. (3 points) Can you think of any situations in which supporting memory would be a bad idea, and what would be gained by not having to support virtual memory? Explain.

Q4. (3 points) In the context of memory management, is it ever possible for the base register and the limit register of a process to contain the same value? Answer in terms of yes or no, explaining your answer.

Q5. (15 points) Assume that a system has a 32-bit virtual address with a 4-KB page size. Write a C program that is passed a virtual address (in decimal) from the command line and have it output the page number and offset for the given address.

As an example, your program would run as follows:

```
./addresses 19986
```

Your program would output:

```
The address 19986 contains:
page number = 4
offset = 3602
```

Writing this program will require using the appropriate data type to store 32 bits. You are encouraged to use unsigned data types as well.
