A Completely Unofficial Exam for
THE UNIVERSITY OF NEW SOUTH WALES

A Sample Practical Examination for

COMPUTING 1

COMP1917

Week 8 16s1

Any questions email
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or ask your tutor.

This is a sample paper, some of these questions have been asked before. This paper was compiled for the quiet week for COMP1917 16s1, for revision.

Question 1 Given an integer `n`, write a function that prints out a triangle of `n` width and height. Sample output is shown below:

```
./q1
5
*****
 ****
  ***
   **
    *
```

A compiled solution `q1sol` is given. Write your answer in `q1.c` and compile with `gcc -Wall -Werror -o q1 q1.c`

Question 2 Given an odd integer `n` between 3 and 25 inclusive, write a function that prints out a diamond pattern using the letters of the alphabet. The output will have width and height of size `n`. Sample output is shown below:

```
./q2 9
input: 9
ABCD FGHI
ABC   GHI
AB     HI
A       I

A       I
AB     HI
ABC   GHI
ABCD FGHI
```

A compiled solution `q2sol` is given. Write your answer in `q2.c` and compile with `gcc -Wall -Werror -o q2 q2.c`

Question 3 Given two strings, write a function that determines whether the two strings are anagrams, that is, if one can be rearranged to spell the other. If the two given strings are anagrams, `return 1`, else `return 0`. Disregard spaces and other punctuation and make no distinction between uppercase and lowercase characters. Sample output is shown below:

```
./q3
Enter string 1:  parliament
Enter string 2:  partial men

parliament
can be rearranged to spell
```

```
partial men


./q3
Enter string 1:  clint Eastwood
Enter string 2:  Old West action

clint Eastwood
can be rearranged to spell
Old West action
```

A compiled solution `q3sol` is given. Write your answer in `q3.c` and compile with `gcc -Wall -Werror -o q3 q3.c`

Question 4 Given an array and its size, write a function that determines the order of the array. You are to `return ASCENDING` if ascending, `return DESCENDING` if descending or `return UNDETERMINED` if it is neither, the array has an invalid size or there is duplicate data. Sample output is shown below:

```
./q4
Enter the size of your array:  5
Enter the elements of the array, seperated by new lines
1
2
3
4
5
The array is in ascending order
```

A compiled solution `q4sol` is given. Write your answer in `q4.c` and compile with `gcc -Wall -Werror -o q4 q4.c`

Question 5 Write a function that takes in two strings, `s1` and `s2` and determines whether `s2` is a substring of `s1`, that is, if `s2` exists inside `s1`. If a substring is found, return a pointer to the start of the `s2` inside `s1`, if not, return `NULL`. The terminating character `\0` is not compared. Do NOT use any `string.h` functions. Sample output is shown below:

```
./q5
Enter the string you wish to search: the quick brown fox jumped over the lazy Dog!
Enter the substring you wish to search for: jump
Searching: [the quick brown fox jumped over the lazy Dog!] for [jump]
Substring [jumped over the lazy Dog!] found
```

A compiled solution `q5sol` is given. Write your answer in `q5.c` and compile with `gcc -Wall -Werror -o q5 q5.c`