Midterm Exam

Programming Workshop 2 (CSCI 1061U)

University of Ontario Institute of Technology

April 3, 2018 (Evening)

Total time: 80 minutes

Family name: _____

Given names: _____

Student number: _____

Question	Marks
1	_____ /20
2	_____ /30
Total	_____ /50

Instructions

- You are only allowed to use the http://en.cppreference.com/w/ in this exam.
- Please submit your source files and the Makefile via Blackboard.
- Total pages (including the header page): 5

Question 1 (20 Marks)

Consider the following file

```
car
zoo
fiasco
of
END
```

You are asked to write a program that loads words from this file upto the termination string, which is "END" in this case. Next the program is able to print these words as seen below:

```
$ ./q1 < words.txt
Top justified:
c z f o
a o i f
r o a
    s
    c
    o

Bottom justified:
    f
    i
    a
c z s
a o c o
r o o f
```

Complete the following code

```cpp
// filename = q1.cpp
#include <iostream>
#include <vector>
#include <string>

using namespace std;

vector<string> read_arr_s(const string& termination)
{
    // TO DO
}

void draw_top_justified(const vector<string>& a)
{
    // TO DO
}

void draw_bottom_justified(const vector<string>& a)
{
    // TO DO
}

int main()
{
  vector<string> a = read_arr_s("END");
  draw_top_justified(a);
```

```
27    draw_bottom_justified(a);
28    return 0;
29  }
```

Question 2 (30 Marks)

We are given a file that stores information about videos and anime using the following format (first line shows a video and the second line shows an anime; notice that we don't allow for spaces in titles).

```
title: Jumanji : resolution: 1024 x 960 : duration: 90
title: Matrox : resolution: 720 x 480 : duration: 23.5 : illustrator : Fukuyama
title: Jumanji1884 : resolution: 1024 x 960 : duration: 90
title: PacificRim : resolution: 1024 x 960 : duration: 90
title: BlackPanther : resolution: 1024 x 960 : duration: 90
title: Dracula : resolution: 1024 x 960 : duration: 90
title: Matrix : resolution: 1024 x 960 : duration: 90 : illustrator : Someone
```

Looking at this file we discern the following structure.

Videos

- name (string)
- xres (int)
- yres (int)
- duration (float)

Anime

- name (string)
- xres (int)
- yres (int)
- duration (float)
- illustrator (string)

You are asked to create the Videos and Animes classes, leveraging inheritance. Your code needs to support the following functionality:

- Writing videos and animes to `ostream`. The output must match what is seen in the file above.
- Reading videos and animes from `istream`.
- Ability to search through videos and animes based upon title match. The match doesn't need to be exact.

Consider who we will use this program.

Case 1: When no search keyword is provided

```
$ ./q3 videofile
title: Jumanji : resolution: 1024 x 960 : duration: 90
title: Matrox : resolution: 720 x 480 : duration: 23.5 : illustrator : Fukuyama
title: Jumanji1884 : resolution: 1024 x 960 : duration: 90
title: PacificRim : resolution: 1024 x 960 : duration: 90
title: BlackPanther : resolution: 1024 x 960 : duration: 90
title: Dracula : resolution: 1024 x 960 : duration: 90
title: Matrix : resolution: 1024 x 960 : duration: 90 : illustrator : Someone
```

Case 2: When a search keyword is provided

```
$ ./q3 videofile Mat
title: Matrox : resolution: 720 x 480 : duration: 23.5 : illustrator : Fukuyama
title: Matrix : resolution: 1024 x 960 : duration: 90 : illustrator : Someone
```

Starter Code

```cpp
#include <iostream>
#include <string>

using namespace std;


class Video
{
protected:
  string _title;
  int _xres, _yres;
  float _duration;

};


class Anime : public Video
{
protected:
  string _illustrator;
};

// Read videos/animes from istream into an array
// Write video/animes stored in an array to ostream
// Search the array and find the matching items and write those to ostream

int main(int argc, char** argv)
{
  return 0;
}
```

Makefile

Modify the following Makefile as needed and upload with your cpp (q1.cpp, q2.cpp and q3.cpp) files.

```
all: q1 q2

q1: q1.cpp
    g++ q1.cpp -o q1

q2: q2.cpp
    g++ q2.cpp -o q2

.PHONY:
    clean
```

```
clean:
    rm q1
    rm q2
```

All Done

Do not forget to submit q1.cpp, q2.cpp, and Makefile.