

# Homework 5: Decision Trees

Assigned: Wednesday 27 March

Due Date: Wednesday 03 April

## Objectives

To gain more experience with `if` statements.

## Assignment

For this assignment, you will write a program that implements a simple movie selection decision tree. The decision tree will help the user determine which Dwayne Johnson movie to see. Use the image in Figure 1 as your reference for search criteria and recommendations to give the user.

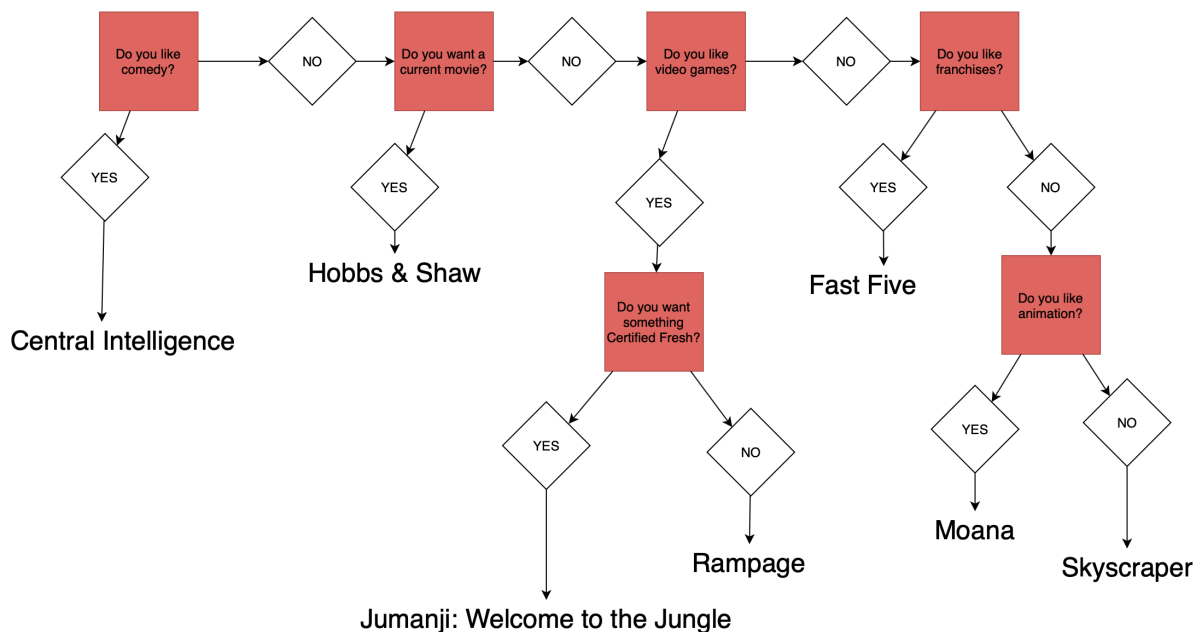


Figure 1: Dwayne Johnson movie decision tree

## Example Compilation and Execution

```
[arsenaul@linux1 hw5]$ gcc -Wall movies.c
```

```
[arsenaul@linux1 hw5]$ ./a.out
Do you like comedy? (y/n) n
Do you want a current movie? (y/n) y
You should see HOBBS & SHAW.
```

```
[arsenaul@linux1 hw5]$ ./a.out
Do you like comedy? (y/n) y
```

You should see CENTRAL INTELLIGENCE.

```
[arsenaul@linux1 hw5]$ ./a.out
Do you like comedy? (y/n) n
Do you want a current movie? (y/n) n
Do you like video games? (y/n) y
Do you want something Certified Fresh? (y/n) y
You should see JUMANJI: WELCOME TO THE JUNGLE.
```

```
[arsenaul@linux1 hw5]$ ./a.out
Do you like comedy? (y/n) n
Do you want a current movie? (y/n) n
Do you like video games? (y/n) n
Do you like franchises? (y/n) n
Do you like animation? (y/n) n
You should see SKYSCRAPER.
```

```
[arsenaul@linux1 hw5]$ ./a.out
Do you like comedy? (y/n) n
Do you want a current movie? (y/n) n
Do you like video games? (y/n) n
Do you like franchises? (y/n) y
You should see FAST FIVE.
```

## Starter Code

```

/*****
** File:  movies.c
** Author: <studentName>
** Date:  10/19/21
** Section: CMSC104 Section 02
** E-mail: <username>@umbc.edu
**
** This file contains the main program for Homework 5.
** This program interacts with a user to suggest a
** Dwayne Johnson movie to watched based on a simple
** decision tree.
*****/

#include<stdio.h>

int main() {
    // Define the variables
    char      /* read in y/Y/n/N answer from the user */
    char      /* read in carriage return, but don't really need to use */

    printf("Do you like comedy? ");
    scanf("%c%c", );

```

```

if () {
    // What's the first movie in the chart?
} else {
    printf("Do you want a current movie? ");

    // Another scanf() to update the variable

    // More if/else statements
}

return 0;
}

```

## Notes

1. Please name your C program “movies.c”
2. To read in a single character typed in by the user, use the following:  
`scanf("%c%c", &reply, &cr);`  
 where `reply` and `cr` were declared as variables of type `char` earlier.  
`char reply, cr;`
  - You have to read in two characters because one you need to capture the carriage return typed by the user, which is stored as `cr`, and isn't needed by the code except for `scanf()`.
3. After you read in the character typed in by the user, you can check if the user types a lower case “y” or upper case “Y” by using:  
`if (reply == 'Y' || reply == 'y')`
  - You may assume that if the user did not type a “y” or “Y”, that they meant **no**.
4. You will need several nested levels of `if` statements similar to Classwork 5. You **must** indent your program, or you'll be horribly lost.
  - If you ask someone to debug an unintended program, it's perfectly reasonable for that person to ask for it to be indented before looking at it.
  - One way to avoid messing up your braces and indentation is to type in the braces as soon as you type in your `if` condition. That is, first type in:

```

if (reply == 'Y' || reply == 'y') {

} else {

}

```

Then go back and fill in the appropriate areas.

## Grading Rubric

- Header comments: 2 points
- Body comments: 3 points
- Compiles: 40 points
- Correct logic: 50 points
- Allows y/Y/n/N: 5 points

## What to Submit

Use the `script` command to record yourself compiling your program and running your program five times using different search criteria (i.e. different combinations of `y` and `n`) each time. Your test runs should result in 5 different movies being recommended. Use `exit` to terminate the recording. Only record yourself compiling and running your program. DO NOT record yourself editing your program. If you mistakenly start up `nano`, while running `script`, just exit from `script` and start over. (The new typescript file will overwrite the old one.)

When you are done, check the contents of your typescript file. Make sure it does not include you editing your program. Then submit your program and typescript file.

```
[arsenaul@linux1 hw5]$ cat typescript
```

NOTE: The contents of your file should display here.

```
[arsenaul@linux1 hw5]$ submit cmsc104_arsenaul hw5 movies.c typescript
```

## Verify Submission

If you *think* you submitted the assignment, but the `submitls` command doesn't show you your file names, then the files were **not** submitted and no grade will be given.

```
[arsenaul@linux1 hw5]$ submitls cmsc104_arsenaul hw5
```