**File Input**

Reference: Gaddis 4.10

What is the average age of Best Actress winners at the Oscars?

Look at the BestActress.txt file – *How would you calculate the average by hand?*

How does a computer program need to do it?

Typically a file contains MANY pieces of data

* Scanner class methods (section 4.10) will be very helpful

**Steps:**

1. Instantiate a File object sending to its constructor the actual filename as a String (which the user may have entered)
2. End the program if the file doesn’t exist, so the program doesn’t crash
3. Instantiate a Scanner object sending its constructor the File object created in step 1

1. Create a loop that executes **as long as there is more data in the file to be read**
2. Use Scanner class methods to read the data of the proper type

**Code for our Actresses**

File inputFile = new File (“ ”);

if(!inputFile.exists())

{

System.out.println(“Sorry, file doesn’t exist. Ending program.”);

System.exit(1); //use because we can’t recover from the error

}

Scanner scan = new Scanner ( );

while ()

{

}

**File Requirements**

*What must be true for this to work?*

* The file MUST be plaintext
  + .txt or no extension in MacOSX
  + NOT a Word document or .rtf
* Can have any number of items per line
  + nextInt(), nextDouble(), etc will read in a value of that type
  + next() will read until the next whitespace character (space, tab, newline) into a String
  + nextLine() will read until an end of line character into a String
* When reading in from a file you start at the top, and go in order (left to right, top to bottom) until you reach the end or stop!

**But Will It Compile?**

When reading from a file, Java demands that the programmer recognize that bad things could happen

In Java, bad things are called

Therefore, we need to counteract with 1 of 2 methods

**Method 1**

Tell the world we know about the "bad thing" by including the phrase

in the header of the method that attempts to use the file

public static void main (String [ ] args)

{

:

}

**Method 2**

* Use a "try-catch" block (more sophisticated)

public static void main(String[] args)  
{   
 int number;  
 Scanner myScan;

File inputFile = new File(“input.txt”);  
 myScan = new Scanner( inputFile );

while ( myScan.hasNext( ) ) // as long as there are more tokens  
 {  
 value = scan.nextDouble( );

total += value;

System.out.println (“The number read was “ + value);

}  
 System.out.println( "End of file detected. Goodbye" );

**{  
 System.out.println ("Sorry no such file exists");  
 System.exit(1);  
 }** } //end of method

**A Simpler Example**

425  
300  
227  
271  
324  
219  
383  
484  
203  
481  
499  
167  
39  
340

*Can we find the total of all numbers in the file?*

double value;

double total=0.0;

File inputFile = new File (“numbers.txt”);

if(!inputFile.exists())

{

System.out.println(“Sorry, file doesn’t exist. Ending program.”);

System.exit(1); //use because we can’t recover from the error

}

Scanner scan = new Scanner ( );

while ()

{

value = scan.nextInt( );

total += value;

System.out.println (“The number read was “ + value);

}

**What is output?**

File inputFile = new File (“names.txt”);

if(!inputFile.exists())

{

System.out.println(“Sorry, file doesn’t exist. Ending.”);

System.exit(1);

}

Scanner scan = new Scanner (inputFile);

byte count = 0;

while ( myScan.hasNext( ) )

{

String input = myScan.next ();

if ( input.equals (“Joe”))

count++;

else

System.out.println (input);

}

System.out.println(“Count is “ + count);

BestActress file: Year Name Movie Age Nationality

1928 Laura\_Gainor Sunrise 22 American

1929 Mary\_Pickford Coquette 37 Canadian

1930 Norma\_Shearer The\_Divorcee 30 Canadian

1931 Marie\_Dressler Min\_and\_Bill 62 Canadian-American

1932 Helen\_Hayes The\_Sin\_of\_Madelon\_Claudet 32 American

1933 Katharine\_Hepburn Morning\_Glory 26 American

1934 Claudeette\_Colbert It\_Happened\_One\_Night 31 American

1935 Bette\_Davis Dangerous 27 American

1936 Luise\_Rainer The\_Great\_Zeigfeld 26 German

1937 Luise\_Rainer The\_Good\_Earth 27 German

1938 Bette\_Davis Jezebel 30 American

1939 Vivien\_Leigh Gone\_With\_the\_Wind 26 British

1940 Ginger\_Rogers Kitty\_Foyle 29 American

1941 Joan\_Fontaine Suspicion 24 British-American

1942 Greer\_Garson Mrs.\_Miniver 39 British

1943 Jennifer\_Jones The\_Song\_of\_Bernadette 24 American

1944 Ingrid\_Bergman Gaslight 29 Swedish

1945 Joan\_Crawford Mildred\_Pierce 37 American

1946 Olivia\_de\_Havilland To\_Each\_His\_Own 30 British-American

1947 Loretta\_Young The\_Farmer's\_Daughter 34 American

1948 Jane\_Wyman Johnny\_Belinda 34 American

1949 Olivia\_de\_Havilland The\_Heiress 33 British-American

1950 Judy\_Holliday Born\_Yesterday 28 American

1951 Vivien\_Leigh A\_Streetcar\_Named\_Desire 38 British

1952 Shirley\_Booth Come\_Back,\_Little\_Sheba 45 American

1953 Audrey\_Hepburn Roman\_Holiday 24 British

1954 Grace\_Kelly The\_Country\_Girl 26 American

1955 Anna\_Magnani The\_Rose\_Tattoo 47 Italian

1956 Ingrid\_Bergman Anastasia 41 Swedish

1957 Joanne\_Woodward The\_Three\_Faces\_of\_Eve 27 American

1958 Susan\_Hayward I\_Want\_to\_Live! 39 American

1959 Simone\_Signoret Room\_at\_the\_Top 38 French

1960 Elisabeth\_Taylor Butterfield\_8 28 American

1961 Sophia\_Loren Two\_Women 27 Italian

1962 Anne\_Bancroft The\_Miracle\_Worker 31 American

1963 Patricia\_Neal Hud 37 American

1964 Julie\_Andrews Mary\_Poppins 30 English

1965 Julie\_Christie Darling 24 British

1966 Elizabeth\_Taylor Who's\_Afraid\_of\_Virginia\_Woolf? 34 American

1967 Katharine\_Hepburn Guess\_Who's\_Coming\_to\_Dinner 60 American

1968 Katharine\_Hepburn The\_Lion\_in\_Winter 61 American

1968 Barbra\_Streisand Funny\_Girl 26 American

1969 Maggie\_Smith The\_Prime\_of\_Miss\_Jean\_Brodie 35 English

1970 Glenda\_Jackson Women\_In\_Love 34 British

1971 Jane\_Fonda Klute 34 American

1972 Liza\_Minnelli Cabaret 26 American

1973 Glenda\_Jackson A\_Touch\_of\_Class 37 British

1974 Ellen\_Burstyn Alice\_Doesn't\_live\_Here\_Anymore 42 American

1975 Louise\_Fletcher One\_Flew\_Over\_The\_Cockoo's\_Nest 41 American

1976 Faye\_Dunaway Network 35 American

1977 Diane\_Keaton Annie\_Hall 31 American

1978 Jane\_Fonda Coming\_Home 41 American

1979 Sally\_Field Norma\_Rae 33 American

1980 Sissy\_Spacek Coal\_Miner's\_Daughter 30 American

1981 Katharine\_Hepburn On\_Golden\_Pond 74 American

1982 Meryl\_Streep Sophie's\_Choice 33 American

1983 Shirley\_MacLaine Terms\_of\_Endearment 49 American

1984 Sally\_Field Places\_in\_the\_Heart 38 American

1985 Geraldine\_Page Trip\_to\_Bountiful 61 American

1986 Marlee\_Matlin Children\_of\_a\_Lesser\_God 21 American

1987 Cher Moonstruck 41 American

1988 Jodie\_Foster The\_Accused 26 American

1989 Jessica\_Tandy Driving\_Miss\_Daisy 81 British

1990 Kathy\_Bates Misery 42 American

1991 Jodie\_Foster The\_Silence\_of\_the\_Lambs 29 American

1992 Emma\_Thompson Howards\_End 33 British

1993 Holly\_Hunter The\_Piano 35 American

1994 Jessica\_Lange Blue\_Sky 45 American

1995 Susan\_Sarandon Dead\_Man\_Walking 49 American

1996 Frances\_McDormand Fargo 39 American

1997 Helen\_Hunt As\_Good\_As\_It\_Gets 34 American

1998 Gwyneth\_Paltrow Shakespeare\_in\_Love 26 American

1999 Hilary\_Swank Boys\_Don't\_Cry 25 American

2000 Julia\_Roberts Erin\_Brockovich 33 American

2001 Halle\_Berry Monster's\_Ball 35 American

2002 Nicole\_Kidman The\_Hours 35 Australian-American

2003 Charlize\_Theron Monster 28 South-African

2004 Hilary\_Swank Million\_Dollar\_Baby 30 American

2005 Reese\_Witherspoon Walk\_the\_Line 29 American

2006 Helen\_Mirren The\_Queen 61 English

2007 Marion\_Cotillard La\_Vie\_en\_Rose 32 French

2008 Kate\_Winslet The\_Reader 33 English

2009 Sandra\_Bullock The\_Blind\_Side 45 American

2010 Natalie\_Portman Black\_Swan 29 Israeli-American

2011 Meryl\_Streep The\_Iron\_Lady 62 American

2012 Jennifer\_Lawrence Silver\_Linings\_Playbook 22 American

2013 Cate\_Blanchett Blue\_Jasmine 44 Australian

2014 Julianne\_Moore Still\_Alice 54 American