Assignment 4 – Merge Sort

For this last assignment, you will apply the Merge Sort algorithm on an unsorted employee information file and sort the file by any one of the fields in the file.

The employee information file will be a simple tab-separated value file containing the following information:

- Employee ID (W9999999)
- Last Name
- First Name
- Street Address
- City
- Province (ON, NS, NB, …)
- Postal Code (A9A-9A9)
- Phone Number (999-999-9999)
- Gender (M/F)
- Age (99)
- Number of Dependents (99)
- Department Category (factory, office, sales)
- Union Member (Y/N)
- Hourly Rate (99.99)

The following is the file format:

```
<employee id>\t<last name>\t<first name>\t<address>\t<city>\t<province>\t<postal code>\t<phone>\t<gender>\t<age>\t<# of dependents>\t<dept. cat.>\t<union>\t<hourly rate>
```

Sample Employee File

```
W00000001  Smith  Bob   123 Street Rd.  Halifax  NS  H0H 0H0  555-1212  M  32  3  office   N  28.75
W12345678  Doe    Jane  555 Road St.    London   ON  A9A 9A9  555-1313  F  27  0  factory  Y  19.50
```

Your program will allow the user to enter the *field* number at the command line. The application will then use this value to sort the rows by that field in ascending order.

```
$ ./mergesort
Usage: mergesort <filename> -field=<fieldno>


$ ./mergesort employees.txt -field=13


$ head -n 5 employees.txt
W0549113 Blackett    Tessi    8214 Carioca Trail         Haverstock Island    NB   E0I-2M3  751-971-4933 M  24 6  factory N  12.5
W0680661 Kopelman    Gradeigh 81855 Cottonwood Crossing  Mathesons Island     AB   W9E-9L3  718-879-1706 F  43 4  sales   Y  13
W0152999 Bonus       Micaela  5904 Oriole Park           East Gore            NF   R7D-5K3  850-362-7956 M  32 2  office  Y  14
W0873270 Waudby      Layla    15 Thackeray Place         Long Lake            AB   S7O-5X3  973-210-0163 M  57 3  sales   N  14.5
W0065705 Presdee     Davidde  3824 Novick Lane           Burned Potato Falls  BC   R5H-5O8  351-534-9270 M  64 2  factory N  14.5


$ ./mergesort employees.txt -field=1


$ head -n 5 employees.txt
W0376228 Abbot       Gaston   6 Spenser Parkway          Southwest Point      NF   T7H-7H0  675-799-8419 M  19 5  office  Y  23.25
W0644739 Bellworthy  Moe      59932 Morningstar Road     Westchester Station  MB   D9X-7A1  801-675-4833 M  37 5  office  N  42
W0265872 Biddlecombe Barbie   17797 Carberry Trail       Zwicker Island       NF   Z9L-7U0  235-250-3611 M  45 6  factory Y  26.25
W0549113 Blackett    Tessi    8214 Carioca Trail         Haverstock Island    NB   E0I-2M3  751-971-4933 M  24 6  factory N  12.5
W0152999 Bonus       Micaela  5904 Oriole Park           East Gore            NF   R7D-5K3  850-362-7956 M  32 2  office  Y  14


$ ./mergesort employees.txt -field=0


$ head -n 5 employees.txt
W0015115 Orniz       Issiah   2 Leroy Hill               Bar Pond             QC   P5I-2T0  221-778-4244 M  65 4  office  Y  30
W0030049 Winckworth  Nyssa    8288 Surrey Street         Minasville           PEI  W5B-4L2  701-162-9768 M  51 2  office  N  15
W0065705 Presdee     Davidde  3824 Novick Lane           Burned Potato Falls  BC   R5H-5O8  351-534-9270 M  64 2  factory N  14.5
W0082014 Pawle       Albertina 9 Sunfield Plaza          Hornet Lake          NS   Z5O-8M2  853-337-7013 F  37 2  sales   Y  24
W0140959 Klousner    Elijah   67890 Everett Park         Bluff Head           BC   W6K-0L1  996-567-3068 F  18 5  sales   Y  36.5
```