CENG 322

Common Mistakes in HW2

Common Mistakes in HW2

- Simple Compiler Errors:
  - Not including time.h
  - Input type mismatch compiler errors

- Code still runs but the compiler is not happy.

Common Mistakes in HW2

- Other simple mistakes:
  - Using month attribute inside Cafeteria struct
  - Lack of customer count prints
  - No randomness. To add randomness, use this line
    - srand(time(NULL));

Common Mistakes in HW2

- The most common mistakes:
  - Free functions are not used at all.
  - Free function are not used properly.

- Without the proper usage of free function, there would be memory leaks.
- Even if you use free function, there can still be memory leaks.
- You can check for memory leaks using valgrind tool.

Mistakes Related to Free Function

- Install valgrind library:
  - $ sudo apt install valgrind
- Simplest way to run valgrind:
  - $ valgrind --leak-check=yes ./a.out

- There are other ways/purposes to use valgrind to check your C program as well, but this should be enough for the time being.

Valgrind Examples

- An output for leak-free code:

```
************ The Sales Results ************

Normal menu sales: 19434 TL, Vegan menu sales: 19192 TL, Vegetarian menu sales: 18640 TL
Student sales: 10830 TL, Academic personal sales: 28064 TL, Administrative personal sales: 18
372 TL
Total sale income: 57266 TL
==2335==
==2335== HEAP SUMMARY:
==2335==     in use at exit: 0 bytes in 0 blocks
==2335==   total heap usage: 76 allocs, 76 frees, 124,881 bytes allocated
==2335==
==2335== All heap blocks were freed -- no leaks are possible
==2335==
==2335== Use --track-origins=yes to see where uninitialised values come from
==2335== For lists of detected and suppressed errors, rerun with: -s
==2335== ERROR SUMMARY: 3 errors from 3 contexts (suppressed: 0 from 0)
```

Valgrind Examples

- An output for leaky code:

```
*************** The Sales Results ***************

Normal Menu Sales: 18322, Vegan Menu Sales: 19936, Vegetarian Menu Sales: 18880
Student Sales: 11238, Academic Sales: 28560, Adminstrative Sales: 17340
Total Sales: 57138
==2828==
==2828== HEAP SUMMARY:
==2828==     in use at exit: 4,641 bytes in 346 blocks
==2828==   total heap usage: 421 allocs, 75 frees, 14,673 bytes allocated
==2828==
==2828== LEAK SUMMARY:
==2828==    definitely lost: 4,641 bytes in 346 blocks
==2828==    indirectly lost: 0 bytes in 0 blocks
==2828==      possibly lost: 0 bytes in 0 blocks
==2828==    still reachable: 0 bytes in 0 blocks
==2828==         suppressed: 0 bytes in 0 blocks
==2828== Rerun with --leak-check=full to see details of leaked memory
==2828==
==2828== For lists of detected and suppressed errors, rerun with: -s
==2828== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
```