```
Enter Money: 77.71
You entered: 77.71
77 dollars, 2 quarters, 2 dimes and 1 penny
Enter Money: 77.0089
You entered: 77.0089
Negleted changes less than 1 cents
77 dollars
Enter Money: 77.01
You entered: 77.01
77 dollars and 1 penny
Enter Money:
```

Problem 1.18.2.

Amicable pairs

Consider the number 220

Find the sum of factors, except the number itself (also called proper divisors)

220 = 1+2+4+5+10+11+20+22+44+55+110
= 284

Now find the sum of factors for 284

284 = 1+2+4+71+142
= 220

Directory

220 and 284 are called the amicable pairs

Write a program that prints all the amicable numbers. You must write amicable.h and amicable.cpp amicabletest.cpp is given below

FILE: amicabletest.cpp

objects
amicable
amicable.h
amicable.cpp
amicabletest.cpp

```
#include "amicable.h"
int main() {
    const int MAX = 100000000;
    clock_t start = clock() ;
    amicable a(MAX) ;
    clock_t end = clock() ;
    cout <<"Run time for amicable " << double(end - start)/CLOCKS_PER_SEC <<
                        " secs" << endl ;
}
```

Figure 1.23: Amicable numbers

Amicable pairs MAX = 100000000

The following are amicable numbers
0: 220 and 284
1: 1184 and 1210
2: 2620 and 2924
3: 5020 and 5564
4: 6232 and 6368
5: 10744 and 10856
6: 12285 and 14595
7: 17296 and 18416
8: 63020 and 76084
9: 66928 and 66992
10: 67095 and 71145
11: 69615 and 87633
12: 79750 and 88730
13: 100485 and 124155
14: 122265 and 139815
15: 122368 and 123152
16: 141664 and 153176
17: 142310 and 168730
18: 171856 and 176336
19: 176272 and 180848
20: 185368 and 203432
21: 196724 and 202444
22: 280540 and 365084
23: 308620 and 389924
24: 319550 and 430402

204: 66854710 and 71946890
205: 67729064 and 69439576
206: 67738268 and 79732132
207: 68891992 and 78437288
208: 71015260 and 85458596
209: 71241830 and 78057370
210: 72958556 and 74733604
211: 73032872 and 78469528
212: 74055952 and 78166448
213: 74386305 and 87354495
214: 74769345 and 82824255
215: 75171808 and 77237792
216: 75226888 and 81265112
217: 78088504 and 88110536
218: 78447010 and 80960990
219: 79324875 and 87133365
220: 80422335 and 82977345
221: 83135650 and 85603550
222: 84591405 and 89590995
223: 86158220 and 99188788
224: 89477984 and 92143456
225: 90437150 and 94372450
226: 91996816 and 93259184
227: 93837808 and 99899792
228: 95629904 and 97580944
229: 96304845 and 96747315
230: 97041735 and 97945785

Run time for n = 100000000 is 50.09 secs

Can you beat me??

Figure 1.24: Amicable numbers