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/*
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Lab 4a
1.declare variables
2.calculate the births, deaths, and new population
3. Then print out the numbers shown below
*/

#include <iostream>
#include <iomanip>
using namespace std;

int main()
{
	const double birth_percentage = 0.05;
	const double kill_percentage = 0.17;
	const int survive_threshold = 165;

	int population = 1500;
	int pop_end, killed, births;
	int year = 1;

	cout << "YEAR" << setw(20) << "Alive at the start" << setw(20) << "New births" << setw(20)
<< "Killed" << setw(20) << "Alive at the end" << setw(20) << endl;

	while (population >= survive_threshold)
	{
		//calculating births, deaths and new population
			births = population * birth_percentage;
		killed = (population + births) * kill_percentage;
		pop_end = population + births - killed;
		cout << setw(4) << year << setw(17) << population << setw(20) << births <<
setw(20) << killed << setw(17) << pop_end << setw(15) << endl;

		population = pop_end;
		year++;
	}
	return 0;
}

/* YEAR  Alive at the start        New births          Killed    Alive at the end
   1          1500                   75              267            1308
   2          1308                   65              233            1140
   3          1140                   57              203            994
   4          994                    49              177            866
   5          866                    43              154            755
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6	755	37	134	658
7	658	32	117	573
8	573	28	102	499
9	499	24	88	435
10	435	21	77	379
11	379	18	67	330
12	330	16	58	288
13	288	14	51	251
14	251	12	44	219
15	219	10	38	191
16	191	9	34	166
17	166	8	29	145

*/