

**Assignment:**

Program **p07** prints an amortization schedule. Program **p07** writes the amortization schedule to file **a07.dat**. Program **p07** prompts the user for the amount he or she is borrowing, the annual percentage rate used to repay the loan, the term, in years, over which the loan is repaid, and the date of the first payment. Please refer to the section labeled **Display and Keyboard Input** for more detail. The amortization schedule has eight columns. The first column lists the date on which payments are due. The second column identifies the payment number. The third column contains the amount of the payment. The fourth column shows the amount paid to interest. The fifth column has the current balance. The sixth shows the amount paid to principal. The seventh column lists the cumulative amount paid to interest in this year and the eighth column has the cumulative amount paid to principal in this year. Print headings before the first payment and at the beginning of each year as shown in Figure 1, labeled File **a07.dat** format.

**Program Files:**

Project **p07** consists of files **p07.cpp**, **Date07.h**, **Date07.cpp**, **Amortization07.h**, **Amortization07.cpp**, and **p07make**.

Project files must be stored in the root directory of your student account. Failure to store project files in the root directory of your student account will result in a score of **zero (0)** for this project.

File	Description
<b>p07.cpp</b>	File <b>p07.cpp</b> contains functions that prompt for loan parameters and direct the construction of the mortgage amortization schedule.
<b>Date07.h</b>	File <b>Date07.h</b> defines class <i>Date</i> .
<b>Date07.cpp</b>	File <b>Date07.cpp</b> contains the implementation of member functions in class <i>Date</i> .
<b>Amortization07.h</b>	File <b>Amortization07.h</b> defines class <i>Amortization</i> .
<b>Amortization07.cpp</b>	File <b>Amortization07.cpp</b> contains the implementation of member functions in class <i>Amortization</i> .
<b>p07make</b>	File <b>p07make</b> contains instructions that compile and link the files of project <b>p07</b> . File <b>p07</b> is the executable created by the instructions in file <b>p07make</b> . Instructions in file <b>p07make</b> are executed by the UNIX utility <i>make</i> .

**Display and  
Keyboard Input:**

In the dialog below, the user enters text shown in bold.

Enter the principal. **1000**  
P=\$1000.00  
Enter the Annual Percentage Rate (APR). **8.25**  
i=0.006875, APR=8.25  
Enter the number of years in the term. **1.5**  
n=18 months, 1.50 years.  
R=\$59.25  
Enter the month (1..12) when the first payment is due. **3**  
Enter the day of the month (1..28) when the first payment is due. **4**  
Enter the year when the first payment is due. **2002**  
4 mar 2002

The mortgage amortization schedule is in file **a07.dat**.

**Output File:**

The mortgage amortization is written to file **a07.dat**. Specifications for file **a07.dat** are given in Table 1. File **a07.dat** produced in response to data entered above is given in Figure 1

**Table 1.** Output File Specification

Column	Character positions	Title
1	1-11	Due Date
2	13-23	Payment Number
3	26-36	Monthly Payment
4	39-49	Monthly Interest
5	51-61	Monthly Principal
6	63-73	Balance
7	75-85	Yearly Interest
8	87-97	Yearly Principal

Due Date	Payment Number	Monthly Payment	Monthly Interest	Monthly Principal	Balance	Yearly Interest	Yearly Principal
4 Mar 2002	1	59.25	6.88	52.38	1000.00	6.88	52.38
4 Apr 2002	2	59.25	6.51	52.74	947.62	13.39	105.12
4 May 2002	3	59.25	6.15	53.10	894.88	19.54	158.22
4 Jun 2002	4	59.25	5.79	53.47	841.78	25.33	211.69
4 Jul 2002	5	59.25	5.42	53.83	788.31	30.75	265.52
4 Aug 2002	6	59.25	5.05	54.20	734.48	35.80	319.73
4 Sep 2002	7	59.25	4.68	54.58	680.27	40.48	374.31
4 Oct 2002	8	59.25	4.30	54.95	625.69	44.78	429.26
4 Nov 2002	9	59.25	3.92	55.33	570.74	48.70	484.59
4 Dec 2002	10	59.25	3.54	55.71	515.41	52.24	540.30
Due Date	Payment Number	Monthly Payment	Monthly Interest	Monthly Principal	Balance	Yearly Interest	Yearly Principal
4 Jan 2003	11	59.25	3.16	56.09	459.70	3.16	56.09
4 Feb 2003	12	59.25	2.77	56.48	403.61	5.94	112.57
4 Mar 2003	13	59.25	2.39	56.87	347.13	8.32	169.44
4 Apr 2003	14	59.25	2.00	57.26	290.26	10.32	226.70
4 May 2003	15	59.25	1.60	57.65	233.00	11.92	284.35
4 Jun 2003	16	59.25	1.21	58.05	175.35	13.12	342.40
4 Jul 2003	17	59.25	0.81	58.45	117.30	13.93	400.85
4 Aug 2003	18	59.25	0.40	58.85	58.85	14.34	459.70

**Figure 1.** File a07.dat.