

# Mortgage

# Welcome

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*Mortgage* version 1.3 is an English language program to help evaluate fixed-interest-rate mortgage loans. Mortgage will find the loan principal, interest rate, duration or payment when given the other three.

You can do what-ifs, such as, "What will my payment be if I borrow \$100,000 at 7% for 30 years?" or "How much can I borrow at 6.25% for 25 years if I can afford \$1,100 monthly payments?" You can then change one or more of the loan numbers and find a new value for one of the other numbers.

Mortgage will show you the total amount paid and the total interest paid for a loan.

With a set of loan numbers, Mortgage can show a repayment schedule, with the amount paid toward principal and interest for each month, as well as copy the schedule to the system clipboard, or print it.

Mortgage is not suitable for car loans. Other loans are calculated in a different manner that Mortgage does not support.

Mortgage does not include escrow payments or closing costs in its calculations.

Numbers provided by Mortgage may not agree exactly to the penny with those of an actual loan. Because Mortgage is not warranted to be free of all defects, *you must consult a lender before making any final decisions about obtaining a loan.*

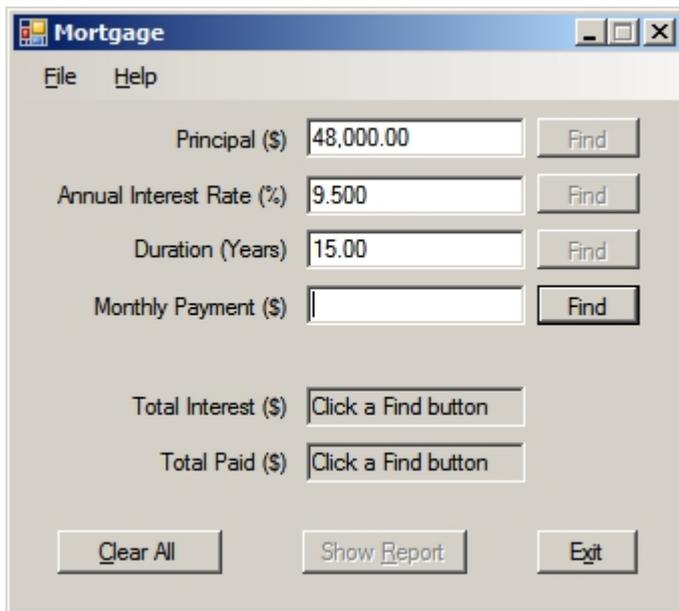
Mortgage requires Microsoft's free .NET Framework version 2.0. Your computer may already have it. If not, Mortgage's setup program will offer to download it from Microsoft. The Framework is a 22.4 MB download.

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[Get Mortgage](#)

## Quick Start

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The screenshot shows a window titled "Mortgage" with a menu bar containing "File" and "Help". The main area contains four rows of input fields, each with a "Find" button to its right:

- Principal (\$) 48,000.00 Find
- Annual Interest Rate (%) 9.500 Find
- Duration (Years) 15.00 Find
- Monthly Payment (\$) Find

Below these are two more rows, each with a text box containing "Click a Find button":

- Total Interest (\$) Click a Find button
- Total Paid (\$) Click a Find button

At the bottom of the window are three buttons: "Clear All", "Show Report", and "Exit".

Figure 1

To start Mortgage, click Start»Programs»Mortgage»Mortgage.

Enter *any* three of the four mortgage loan numbers of your choice, as in Figure 1. Click the **Find** button beside the missing number. You may then change *any* of the four loan numbers as desired and click *any* **Find** button. Repeat as desired. Click **Show Report** to see the loan repayment schedule, shown in Figure 2.

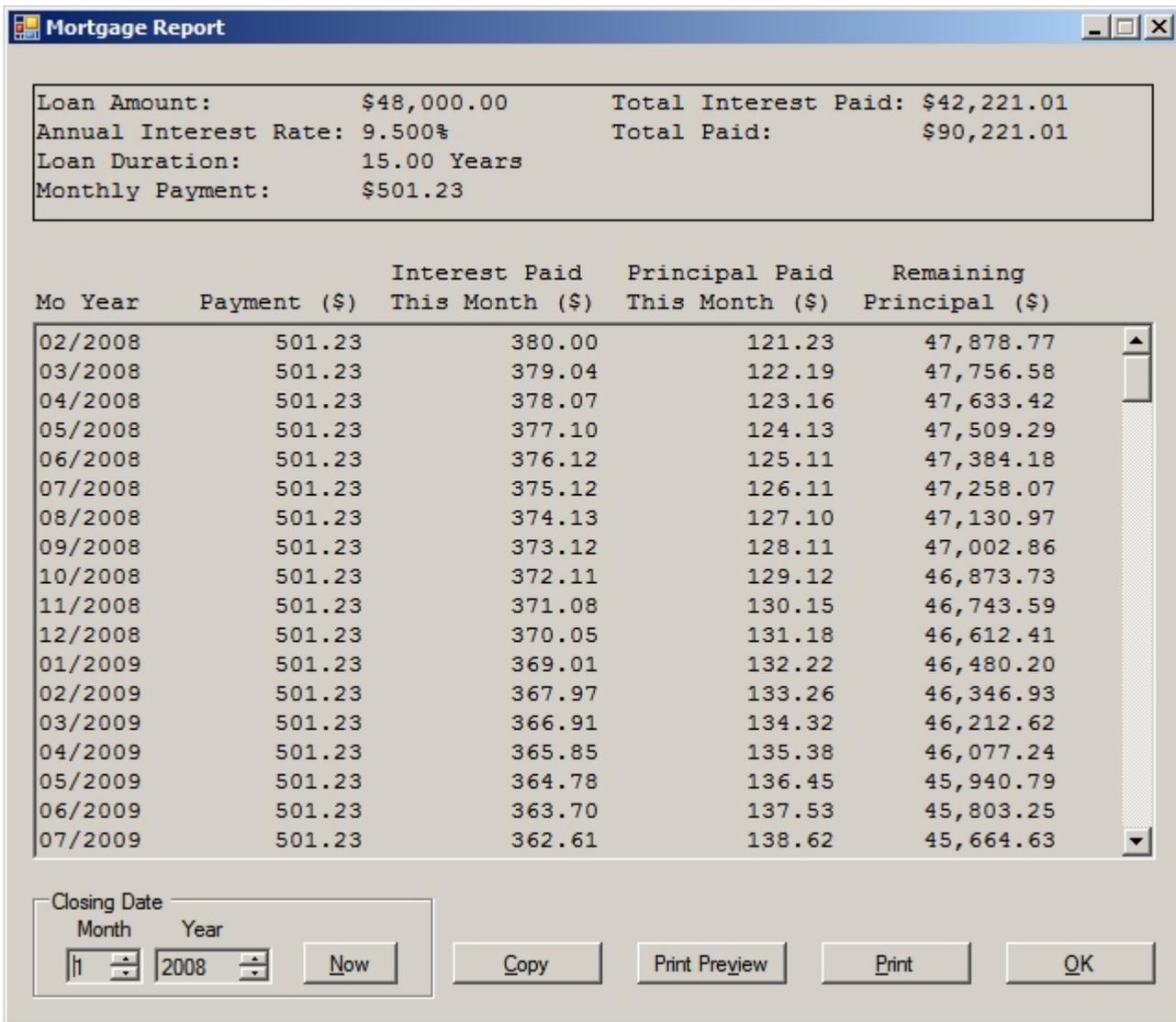
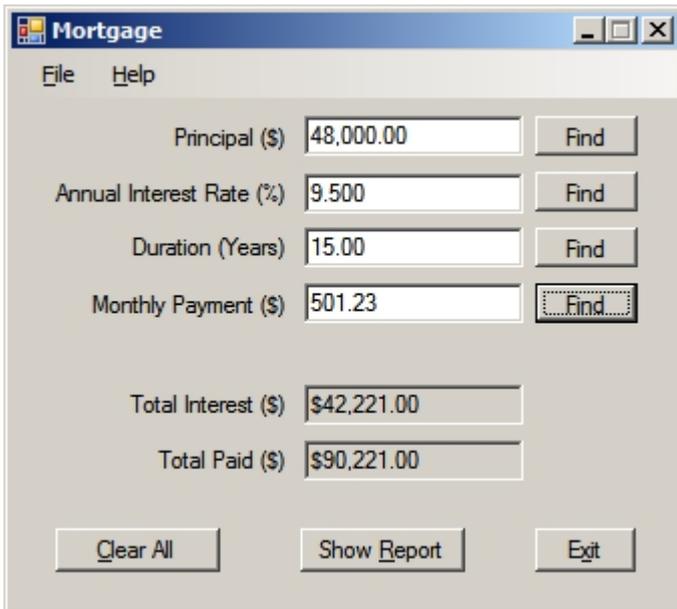


Figure 2

Adjust the **Closing Date** if needed. The report will be updated when you stop adjusting. **C**opy the report to the Windows clipboard or **P**rint the report with the appropriate buttons.

## Main Window



The screenshot shows a window titled "Mortgage" with a menu bar containing "File" and "Help". Below the menu bar are several input fields and buttons:

- Principal (\$) 48,000.00 Find
- Annual Interest Rate (%) 9.500 Find
- Duration (Years) 15.00 Find
- Monthly Payment (\$) 501.23 Find
- Total Interest (\$) \$42,221.00
- Total Paid (\$) \$90,221.00

At the bottom of the window are three buttons: "Clear All", "Show Report", and "Exit".

Figure 3

A fixed rate mortgage loan has four primary numbers (see Figure 3) associated with it:

- **Principal** - the amount of money you borrow from the lending institution
- **Annual Interest Rate** - the (yearly) percentage rate charged for the mortgage
- **Duration** - the number of years it will take to repay the mortgage lender
- **Monthly Payment** - the amount of money you pay each month to retire the mortgage

The four numbers are interrelated. If you provide *any* three of them, Mortgage can determine the fourth. Enter *any* three numbers and click the **Find** button beside the space for the other number. The other number will appear.

If what you type isn't a valid number, you will see a small circle with an exclamation point in it (see Figure 4).



Figure 4

Move your mouse pointer over the circle to see an explanation of the error. Correct the error to remove the error indicator.

Either one or four **Find** buttons will be enabled when three or four valid numbers are present. You can type *four* valid numbers but there is no reason to do so. At least one number must be determined by clicking a **Find** button before the **Show Report** button is enabled and the totals are shown. This is true even if you enter the same four numbers from an earlier **Find**.

After **Finding** a fourth number, you can change **any** one, two or three numbers (changing four isn't useful) and **Find** a new number. You can repeatedly change and **Find** (the same or different) numbers as much as you like. There is no need to **Clear All** before changing numbers, unless you want to.

Two other mortgage numbers are:

- **Total Interest** - the sum of all interest you pay as part of your monthly payments
- **Total Paid** - your total outlay for the mortgage; it is the sum of the principal and the total interest

The totals appear when a **Find** button is clicked. It is worth noting *the total interest paid is often as much as or more than the amount borrowed*. To reduce the total interest paid, reduce the principal or duration of the loan, or increase the monthly payment, and (re-)Find a number.

## Menus

The main window menus are:

## **File**

**Show Report** - show the report window to view, copy and print the mortgage repayment schedule

**Exit** - close (end) Mortgage

## **Help**

**Contents** - show the help contents for Mortgage

**Show ToolTips** - when checked, cause explanatory balloons to be displayed

**About** - show Mortgage's version, copyright and author, and a link to Mortgage's web page

## **Buttons**

The main window has seven buttons:

- **Find** (four buttons) - find the respective number when the other three numbers are specified
- **Clear All** - clear all of the numbers
- **Show Report** - open the repayment schedule report window
- **Exit** - close (end) Mortgage

## Report Window

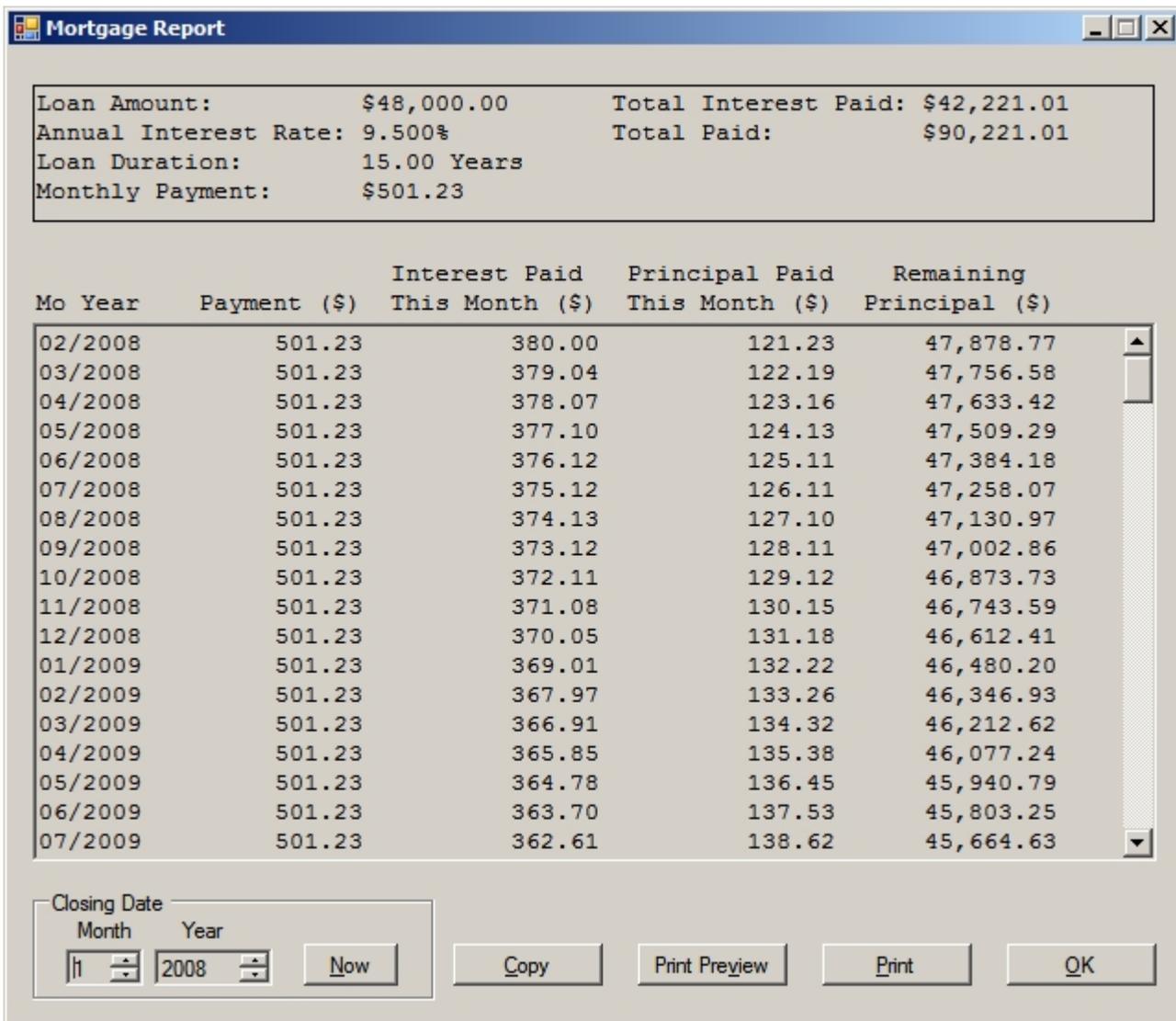


Figure 5

The six numbers from the main window are repeated in the summary at the top of the repayment schedule report (see Figure 5).

Below the summary is a list of monthly payments, with one line for each month in the life of the loan. The first two columns, **Month** and **Year**, are based on the **Closing Date** below the list. Because mortgage payments are made in arrears, the first payment is due the month *after* the closing date. That is why the example in Figure 5 shows January 2008 as the closing date but February 2008 as the first payment date.

Select a closing date by clicking the up and down arrows for the month and year. The report will update one second after you stop changing the closing date. Click the **Now** button to set the closing date to the current month and year.

Click the **Copy** button to copy the entire report to the Windows clipboard. You may also right-click almost anywhere in the window for a pop-up **Copy All** menu item.

Click the **Print Preview** button to preview the entire report. You may also right-click almost anywhere in the window for a pop-up **Print Preview** menu item.

Click the **Print** button to print the entire report. You may also right-click almost anywhere in the window for a pop-up **Print All** menu item.

Click the **OK** button to close the report window and return to the Mortgage main window.

Mortgage rounds the numbers it displays to the nearest cent. This can cause apparent one-cent discrepancies among the

numbers in the repayment schedule. Calculations are made to high accuracy behind the scenes, though.

## Menus

The report window has no menu.

## Buttons

The report window has five buttons:

- **N**ow - set the closing date to the current month and year
- **C**opy - copy the entire report to the Windows clipboard
- **P**rint **P**review - show a print preview dialog for the entire report
- **P**rint - show a print dialog for printing the entire report
- **O**K - close the Mortgage report window

## Examples

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### New Loans

#### Example 1 - Borrow \$48,000 for 15 years at a 9.5% annual interest rate

[Figure 1](#) shows where to type the numbers for a \$48,000 mortgage for 15 years at an annual interest rate of 9.5%. The only **Find** button enabled is beside **Monthly Payment**. If you were to click it you'd see what your monthly payment would be (excluding insurance and tax escrow). See [Figure 3](#) for the resulting monthly payment: \$501.23. The total interest, \$42,221.00, and the total paid, \$90,221.00, are also shown. Clicking the **Show Report** button would show a repayment schedule.

#### Example 2 - How much can I borrow if I can afford \$800 monthly payments?

You can determine how much principal you can borrow for a given interest rate, duration and monthly payment. Suppose you can afford an \$800 per month payment (excluding insurance and tax escrow) and the current interest rate is 5.125% for a 30 year loan. Enter the three known numbers, 800, 5.125 and 30 in the appropriate places and click the principal **Find** button. You will see \$146,927.30 for the principal. The total interest paid is \$141,072.70 and the total paid is \$288,000.00.

If you then want to know how much you can borrow if a 25 year loan has a 5.000% interest rate: Enter 25 for the duration, 5 for the annual interest rate (there is no need to retype the monthly payment) and click the principal **Find** button to see \$136,848.04 for the new principal, \$103,151.96 for the total interest and \$240,000.00 for the total paid. By taking a 25 year loan you would reduce the principal you can borrow by about \$10,000 but you would save about \$28,000 in total interest paid in this example.

### Existing Loans

#### Example 3 - Principal prepayment

Mortgage can find a new duration for your loan if you prepay principal on it. If you add, say \$100, to your monthly payment, the lender will use it to pay down the remaining principal. The lender changes the duration of the loan, though in a subtle way,\* so you can click the duration **Find** button™ to find how soon you will pay the loan off. It is accurate if you pay the extra amount throughout the entire (shortened) duration of the loan.

If you want to add an additional amount to the principal portion of each month's payment, increase the monthly payment by that amount and click the duration **Find** button. The increase will be applied to the each month's principal portion of the payment. The Report will reflect the change. If you have a 30 year, \$100,000 loan at 5% interest, your monthly payment is normally \$536.83. Use Mortgage to verify this amount. Then to see the effect of prepaying \$100 per month, first add \$100 to \$536.83, yielding \$636.83. Type \$636.83 in for the monthly payment amount and click the duration **Find** button. Mortgage shows the loan would be paid off in 21.287 years, or about 21 years and three months. The total paid with \$100 prepayment per month is \$30,582.25 less than without prepayment.

The upshot: You can change only the monthly payment on an existing loan, by paying more each month, so don't change the principal or interest rate in Mortgage when working with an existing loan. Increasing your monthly payment will shorten the duration of the loan, so clicking the duration **Find** button is okay.

Of course clicking any **Find** button is valid when you are considering a new loan or refinancing an existing loan. It should be obvious that clicking the interest **Find** button does not change the interest rate lenders are currently charging on new loans; it tells you the interest rate required for the other numbers to be a valid combination.

#### Example 4 - Refinance an existing loan

To evaluate refinancing an existing loan, take the remaining principal from the existing loan and enter it in Mortgage as **Principal**. Enter the new annual interest rate and duration advertised by a lender. Click the monthly payment **Find** button to see the new monthly payment, total interest and total paid.

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\*This is the subtle cause of duration change: When you make normal monthly payments, the lender charges you each month for that month's interest on the entire remaining principal. The lender arranges the monthly payment amount ahead

of time so it covers all the interest on the principal for first month plus a small amount on the principal. The next month the principal is a little smaller due to the first month's principal paid, so the interest paid for that month is a little smaller, and the principal paid is a little larger. This continues throughout the life of the loan. Because the remaining principal gets smaller each month, the interest on it gets smaller and thus the principal paid each month gets larger.

But if you prepay an additional amount – say \$100 – on the principal each month, the amount of the principal for succeeding months will be smaller than the lender planned, so the interest paid for each succeeding month is less, the principal paid is more, and the loan is paid off faster. That doesn't change the interest rate the lender is charging, or the initial principal, though.

<sup>TM</sup>The lender does not change your interest rate because you prepay on your principal on an existing loan. So clicking the interest rate **Find** button is not valid then. Likewise, clicking the principal **Find** button obviously does not change the amount of money you borrowed initially on an existing loan. It tells you how much you *could* borrow on a *new* loan for the given duration, interest rate and monthly payment.

## Uninstalling Mortgage

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Be sure to close Mortgage and its help before uninstalling it so all Mortgage files can be removed from your computer.

You can uninstall Mortgage with **Add or Remove Programs** in the Windows® Control Panel.

## License

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Mortgage is Copyright © 2008-2010 by Ron Charlton. You may freely distribute its unmodified setup file. You shall not distribute Mortgage or any of its component files by any means other than its provided setup file.

You shall not charge anything other than a nominal media fee for distributing the Mortgage setup file.

Numbers provided by Mortgage may not agree exactly to the penny with those of an actual loan. Because Mortgage is not warranted to be free of all defects, *you must consult a lender before making any final decisions about obtaining a loan.*

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Bug reports, complaints, suggestions and kudos are appreciated.

## Credits

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- Mortgage was compiled with [Microsoft Visual Basic 2005](#).
- Mortgage help was created with [HelpNDoc](#) (free for personal, non-profit use).

## History

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- v1.3 (2010-02-21) - Added explanatory Tool Tips
- v1.2 (2008-12-16) - Loan Duration and Monthly Payment were silently rounded to the nearest whole number, causing slightly incorrect results
- v1.1 (2008-02-24) - First public release

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