

Project Programming

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- 1 definition vs declaration c / cpp source code versus h - header files
- 2 division of the project into logical units interface to possibly have `# include`
- 3 incremental translation
- 4 make / ant versus gcc compiler and development tools (Visual Studio, Eclipse) (description of dependencies in the project)

Example Project - Overview

- 1 File with the function `main()` is the interface and calls the function.
- 2 Transfer of whole numbers (day of week) to a string.
- 3 Integer argument 3 factorial function and value member of the Fibonacci sequence.


```
#include "kalendar.h"
const char *eden_sden(tDen d, tLang l)
/*****
 * p e v e d e   v   t o v   d e n   v   t   d n u   n a   o d p o v   d a j   c   e t   z e c
 * v e   z v o l e n   m   j a z y c e
 *****/
{
    static char *sdny[eBE+1][eNE+1] =
        {"ponedeli", "utory", "streda", "ctvrtek",
         "patek", "sobota", "nedele"},
        {"Monday", "Tuesday", "Wednesday", "Thursday",
         "Friday", "Saturday", "Sunday"}};

    return sdny[l][d];
} /* const char *eden_sden(tDen d, tLang l) */
```

```

typedef
enum {ePO, eUT, eST, eCT, ePA, eSO, eNE} tDen;
/*****
 * vycetovy typ pro den v tydnu
 * PONDELI..NEDELE      -> ePO..eNE      (0..6)
 *****/
typedef enum {eCZ, eBE} tLang;
/*****
 * vycetovy typ pro jazyk:
 *      CZ – cestina
 *      BE – British English
 *****/
const char *eden_sden(tDen d, tLang l);
/*****
 * p evede v   tov den v t dnu na odpov daj c   et zec
 * ve zvolen m jazyce
 *****/

```



```
#include "funkce.h"

double fact(int n) {
    double f = 1.0L;
    for ( ; n > 0; n--)
        f *= n;
    return f;
} /* double fact(int n) */
long fib(long n) {
    if (n == 1)
        return 1;
    else if (n == 2)
        return 2;
    else
        return fib(n - 1) + fib(n - 2);
} /* long fib(long n) */
```

```
double fact(int n);
/*****
 * vypocte n faktori l
 * pro n < 0 vr t -1
 *****/

long fib(long n);
/*****
 * vr t hodnotu n-t ho clenu
 * Fibbonaciho posloupnosti
 *****/
```

```
#include <stdio.h>
#include "funkce.h"
#include "kalendar.h"
int main(void) {
    int i = -1; tDen eden;
    do {
        printf("\nZadej cislem den v tydnu <0, 6>:");
        scanf("%d", &i);
    } while (i < 0 || i > 6);
    eden = (tDen) i;
    printf("\nZadal jsi: %s (anglicky: %s)\n",
        eden_sden(eden, eCZ), eden_sden(eden, eBE));
    do {
        printf("\nZadej cele cislo do 20:");
        scanf("%d", &i);
    } while (i < 0 || i > 20);
    printf("\n%d! = %0.0lf\t fib(%d) = %0.0ld\n",
        i, fact(i), i, fib(i));
    return 0;
} /* int main(void) */
```

Output

```
Zadej cislem den v tydnu <0, 6>:3  
Zadal jsi: ctvrtek (anglicky: Thursday)  
Zadej cele cislo do 20:12  
12! = 479001600  fib(12) = 233
```

prj-demo - make

```
# soubor prj-demo.mak
CPP=cl.exe
ALL : "$prj_demo.exe"
CLEAN :
    "funkce.obj"
    "kalendar.obj"
    "prj-demo.obj"
    "vc60.idb"
    -@erase "$prj_demo.exe"
BSC32=bscmake.exe
LINK32=link.exe
LINK32_OBJS= \
    "prj-demo.obj" \
    "kalendar.obj" \
    "funkce.obj"
"$prj_demo.exe" : "." $(LINK32_OBJS)
    $(LINK32) @<<
    $(LINK32_FLAGS) $(LINK32_OBJS)
<<
```

```
.c{$(INTDIR)}.obj::
$(CPP) @<<
$(CPP_PROJ) $<
<<
```

```
SOURCE=..\funkce.c
" funkce.obj" : $(SOURCE) "$(INTDIR)"
$(CPP) $(CPP_PROJ) $(SOURCE)
```

```
SOURCE=..\kalendar.c
" kalendar.obj" : $(SOURCE) "$(INTDIR)"
$(CPP) $(CPP_PROJ) $(SOURCE)
```

```
SOURCE="..\prj-demo.c"
" prj-demo.obj" : $(SOURCE) "$(INTDIR)"
$(CPP) $(CPP_PROJ) $(SOURCE)
```