MC140: lecture #8

today's topic:

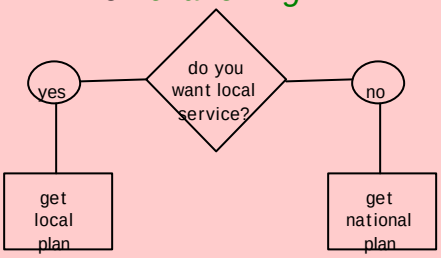
flow charts
pseudo code
if and if/else
nested if/else
switch

flow charts.

where do we make choices?

choice means program will ***branch***

flow charts: representing choices, or *branching*.



testing values.

```
#include <stdio.h>
int main( void ) {
  int x;
  printf( "enter a number:" );
  scanf( "%d",&x );
  if ( x % 2 == 0 ) {
     printf( "your number is even\n" );
  } /* end of if */
} /* end of main() */
```


if syntax.

```
if ( <condition> ) {
   <statement1>;
   <statement2>;
   ...
} /* end of if */
```


making choices: if/else.

```
#include <stdio.h>
int main( void ) {
  int x;
  printf( "enter a number:" );
  scanf( "%d",&x );
  if ( x % 2 == 0 ) {
     printf( "your number is even\n" );
  } /* end of if */
  else {
     printf( "your number is odd\n" );
  } /* end of else */
} /* end of main() */
```

if/else syntax.

```
if ( <condition> ) {
    <statement1>;
    <statement2>;
    ...
} /* end of if */
else {
    <statement1>;
    <statement2>;
    ...
} /* end of else */
```


making more than two choices: if/elseif/else.

```
#include <stdio.h>
int main( void ) {
   int x;
   printf( "enter a number:" );
   scanf( "%d",&x );
   if ( x == 0 ) {
       printf( "your number is zero\n" );
   else if ( x % 2 == 0 ) {
       printf( "your number is even\n" );
   } /* end of if */
   else {
       printf( "your number is odd\n" );
   } /* end of else */
} /* end of main() */
```


if/elseif/else syntax.

```
if ( <condition> ) {
    <statement1>;
    <statement2>;
    ...
} /* end of if */
else if ( <condition> ) {
    <statement1>;
    <statement2>;
    ...
} /* end of else if */
else {
    <statement1>;
    <statement2>;
    ...
} /* end of else */
```


nested if statements.

```
#include <stdio.h>
int main( void ) {
   int x;
   printf( "enter a number:" );
   scanf( "%d",&x );
   if ( x % 2 == 0 ) {
       if ( x >= 0 ) {
              printf( "your number is even and positive\n" );
       }
       else {
              printf( "your number is even and negative\n" );
       } /* end of else */
   } /* end of if */
   else {
       if ( x >= 0 ) {
              printf( "your number is odd and positive\n" );
       }
       else {
              printf( "your number is odd and negative\n" );
       } /* end of else */
   } /* end of else */
} /* end of main() */
```


nested if syntax.

```
if ( <condition> ) {
    if ( < condition> ) {
       <statements>;
    } /* end of if */
    else {
       <statements>;
    } /* end of else */
} /* end of if */
else {
    if ( < condition> ) {
       <statements>;
    } /* end of if */
    else {
       <statements>;
    } /* end of else */
} /* end of else */
```

inner if/else

inner if/else

outer if/else

switch.

```
#include <stdio.h>
int main( void ) {
   int x;
   printf( "enter a number (1=TRUE,0=FALSE):" );
   scanf( "%d",&x );
   switch ( x ) {
       case 0:
              printf( "your number means FALSE\n" );
              break;
       case 1:
              printf( "your number means TRUE\n" );
              break;
       default:
              printf( "your number is not a logical value\n" );
              break;
   } /* end of switch */
} /* end of main() */
```

switch syntax.

```
switch ( <variable> ) {
  case <value1>:
     <statements>;
     break;
  case <value2>:
     <statements>;
     break;
  default:
     <statements>
     break;
} /* end of switch */
```


sample program.

- header
- white space
- brackets
- semi-colons
- declaring and initializing at once
- indenting
- comments

reading.

- material covered today:
  - DD: 3.1-3.6, 4.7
- *assignment #3 was out wednesday*
- *assignment #3 is due next WED 7 FEB*
- *exam #1 is next FRI 9 FEB*
- *review on WED 7 FEB*
- *office hours WED 7 FEB: 10am-12noon*
  (NOT 4.30-6pm)