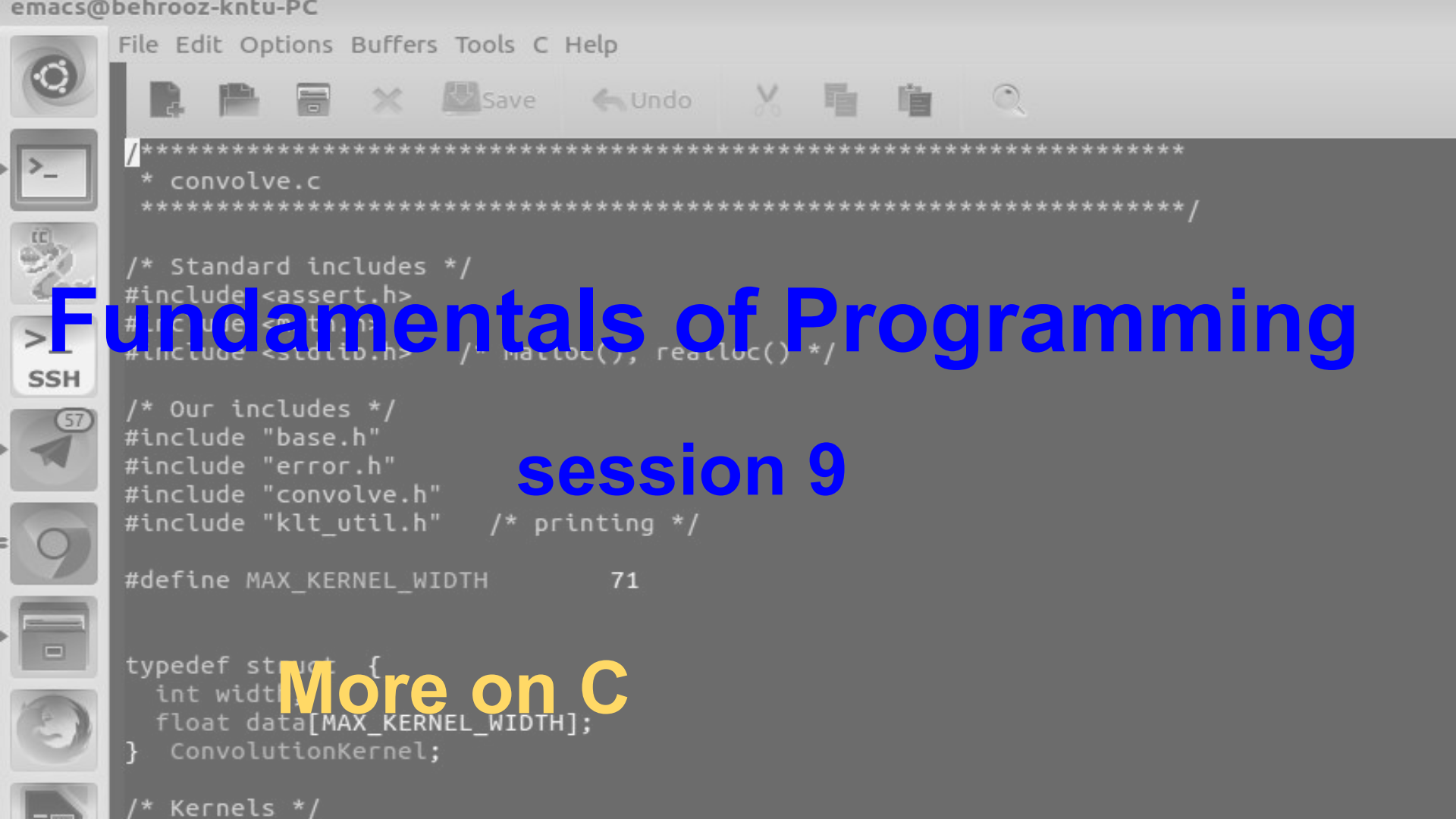

emacs@behrooz-kntu-PC
File Edit Options Buffers Tools C Help
Save
Undo
/* Standard includes */
/* Our includes */
#include "base.h"
#include "error.h"
#include "convolve.h"
#include "klt_util.h" /* printing */
#define MAX_KERNEL_WIDTH 71
float data[MAX_KERNEL_WIDTH];
} ConvolutionKernel;
/* Kernels */
SSH
Fundamentals of Programming
session 9
More on C

Example

Write a program which reads a number and prints its absolute value

Example

```c
#include <stdio.h>

int main() {
  int a;

  scanf("%d", &a);

  if (a >= 0) {
    printf("%d\n",a);
  }
  else {
    printf("%d\n", -a);

  }

  return 0;

}
```

Example

```c
#include <stdio.h>

int main() {
  int a;

  scanf("%d", &a);

  if (a >= 0) {
    printf("%d\n",a);
  }
  else {
    printf("%d\n", -a);

  }

  return 0;

}
```

```c
#include <stdio.h>

int main() {
  int a;

  scanf("%d", &a);

  if (a < 0) {
    a =  -a;
  }

  printf("%d\n",a);

  return 0;

}
```

Example

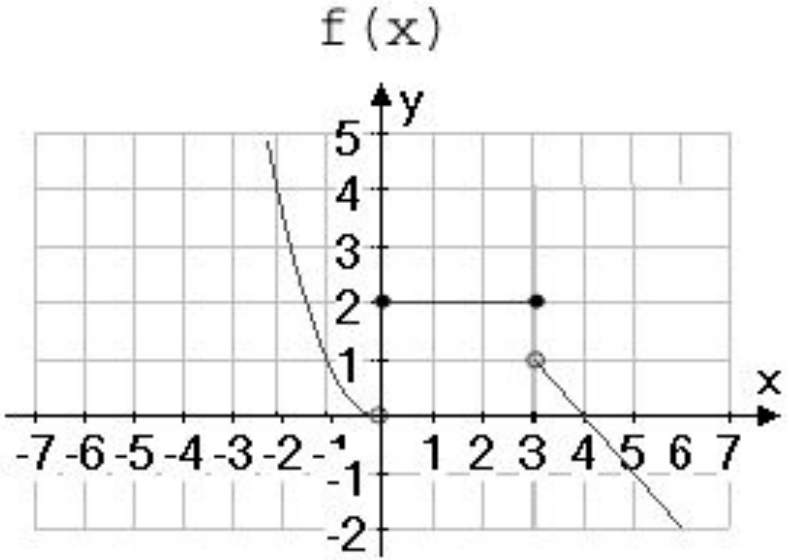
```c
#include <stdio.h>

int main() {
  int a;

  scanf("%d", &a);

  if (a >= 0) {
    printf("%d\n",a);
  }
  else {
    printf("%d\n", -a);

  }

  return 0;

}
```

```c
#include <stdio.h>

int main() {
  int a;

  scanf("%d", &a);

  if (a < 0) {
    a =  -a;
  }

  printf("%d\n",a);

  return 0;

}
```

```c
#include <stdio.h>

int main() {
  int a;

  scanf("%d", &a);

  if (a < 0)
    a = -a;


  printf("%d\n",a);

  return 0;

}
```

Piecewise functions

$$f(x) = \begin{cases} x^2, & x < 0 \\ 2, & 0 \le x \le 3 \\ 4 - x, & x > 3 \end{cases}$$

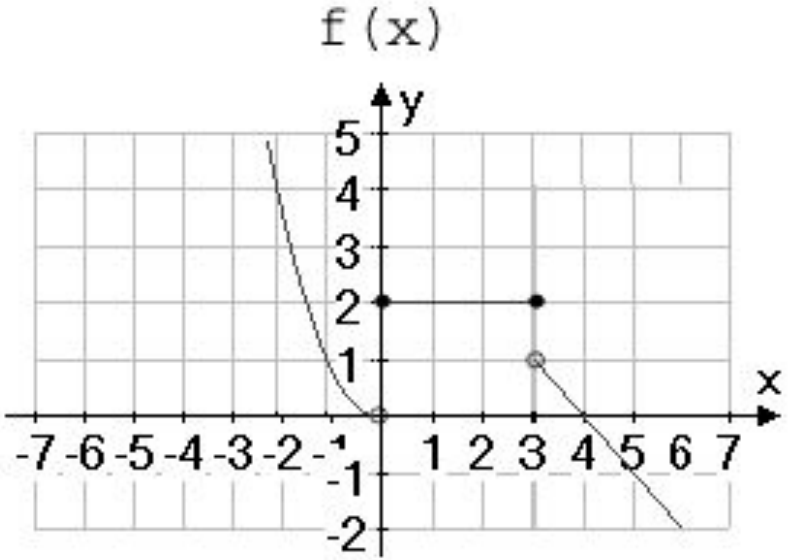


http://math2.uncc.edu/~bjwichno/spring2010/math1121/Lecture_Notes/unit_1/Lectures/lec_piecewise_rule.htm

Piecewise functions

$$f(x) = \begin{cases} x^2, & x < 0 \\ 2, & 0 \le x \le 3 \\ 4 - x, & x > 3 \end{cases}$$

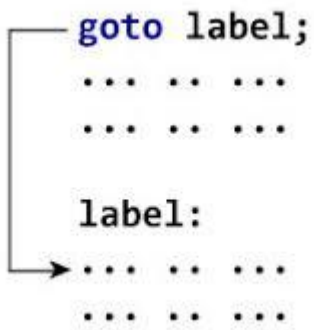
```
float x,y;

scanf("%f", &x);

if (x < 0)
   y = x*x;
else if (x <= 3)
   y = 2;
else
   y = 4-x;

printf("%f\n", y);
```



http://math2.uncc.edu/~bjwichno/spring2010/math1121/Lecture_Notes/unit_1/Lectures/lec_piecewise_rule.htm

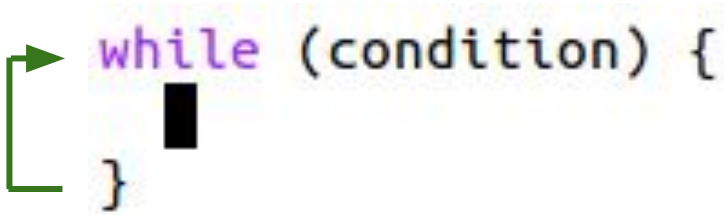
Loops

goto



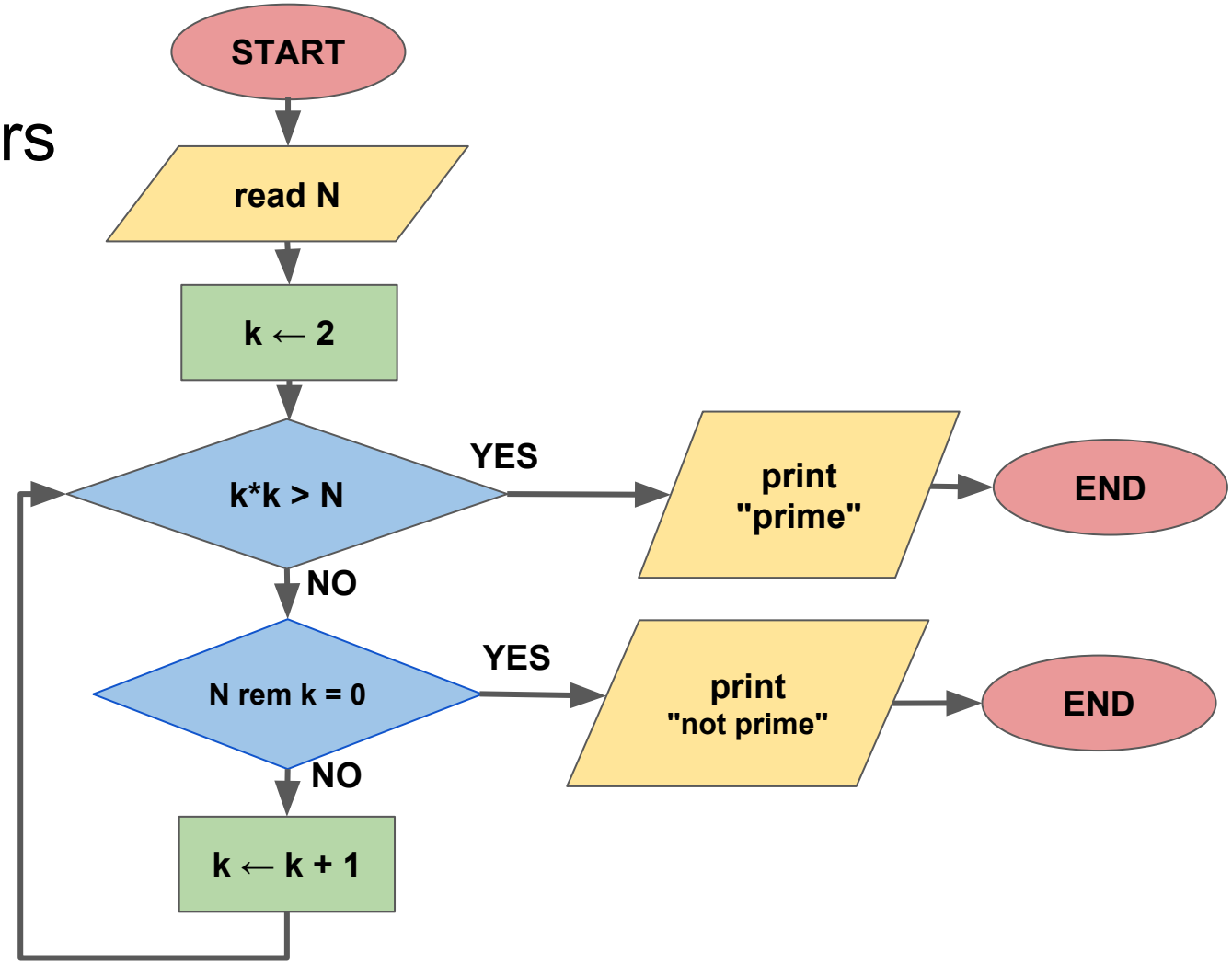
```c
#include <stdio.h>

int main() {
  int N;
  int i;

  scanf("%d",&N);

  i = 1;


 l1:
  if (i > N)
    goto l2;

  printf("%d\n", i);
  i = i + 1;

  goto l1;
 l2:

  return 0;

}
```

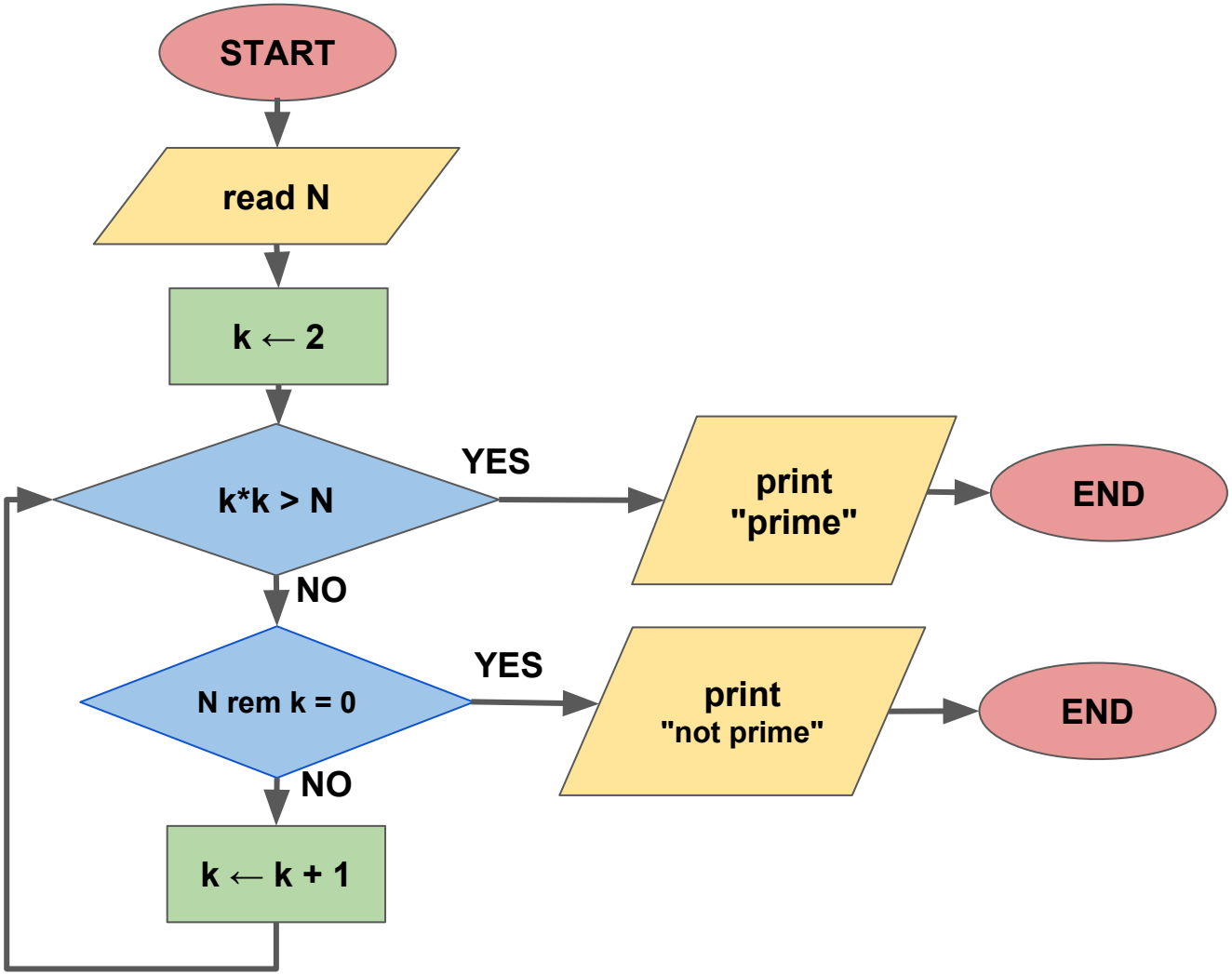
while loop



```c
#include <stdio.h>

int main() {
  int N;
  int i;

  scanf("%d",&N);

  i = 1;

  while (i <= N) {
    printf("%d\n", i);
    i = i + 1;
  }


  return 0;

}
```

Prime numbers






```c
unsigned int N,k;

scanf("%d", &N);

if (N == 1) {
  printf("Not Prime\n");
  goto end;
}

k = 2;

start:
 if (k*k > N) {
   printf("Prime\n");
   goto end;
 }

 if (N % k == 0) {
   printf("Not Prime\n");
   goto end;
 }

 k = k + 1;

 goto start;

end:

 return 0;
```

Avoid using the goto command!

```
  unsigned int N,k;

  scanf("%d", &N);

  if (N == 1) {
    printf("Not Prime\n");
    goto end;
  }

  k = 2;

start:
  if (k*k > N) {
    printf("Prime\n");
    goto end;
  }

  if (N % k == 0) {
    printf("Not Prime\n");
    goto end;
  }

  k = k + 1;

  goto start;

end:

  return 0;
```

```
#include <stdio.h>

int main() {
  unsigned int N,k;

  scanf("%d", &N);

  k = 2;

  while (k*k <= N  &&  N % k != 0) {
    k = k + 1;
  }

  if (k*k > N)
    puts("Prime");
  else
    puts("Not Prime");
}
```

```c
#include <stdio.h>

int main() {
  unsigned int N,k;

  scanf("%d", &N);

  k = 2;

  while (k*k <= N  &&  N % k != 0) {
    k = k + 1;
  }

  if (k*k > N)
    puts("Prime");
  else
    puts("Not Prime");
}
```

```c
#include <stdio.h>

int main() {
  unsigned int N,k, prime;
  scanf("%d", &N);

  prime = 1;
  k = 2;
  while (k*k <= N) {

    if (N % k == 0)
      prime = 0;

    k = k + 1;
  }

  if (prime == 1)
    puts("Prime");
  else
    puts("Not Prime");
}
```

```c
#include <stdio.h>

int main() {
  unsigned int N,k, prime;
  scanf("%d", &N);

  prime = 1;
  k = 2;
  while (k*k <= N) {

    if (N % k == 0)
      prime = 0;

    k = k + 1;
  }

  if (prime == 1)
    puts("Prime");
  else
    puts("Not Prime");
}
```

```c
#include <stdio.h>

int main() {
  unsigned int N,k, prime;
  scanf("%d", &N);

  prime = 1;
  k = 2;
  while (k*k <= N) {

    if (N % k == 0) {
      prime = 0;
      break;

    }

    k = k + 1;
  }

  if (prime == 1)
    puts("Prime");
  else
    puts("Not Prime");
}
```