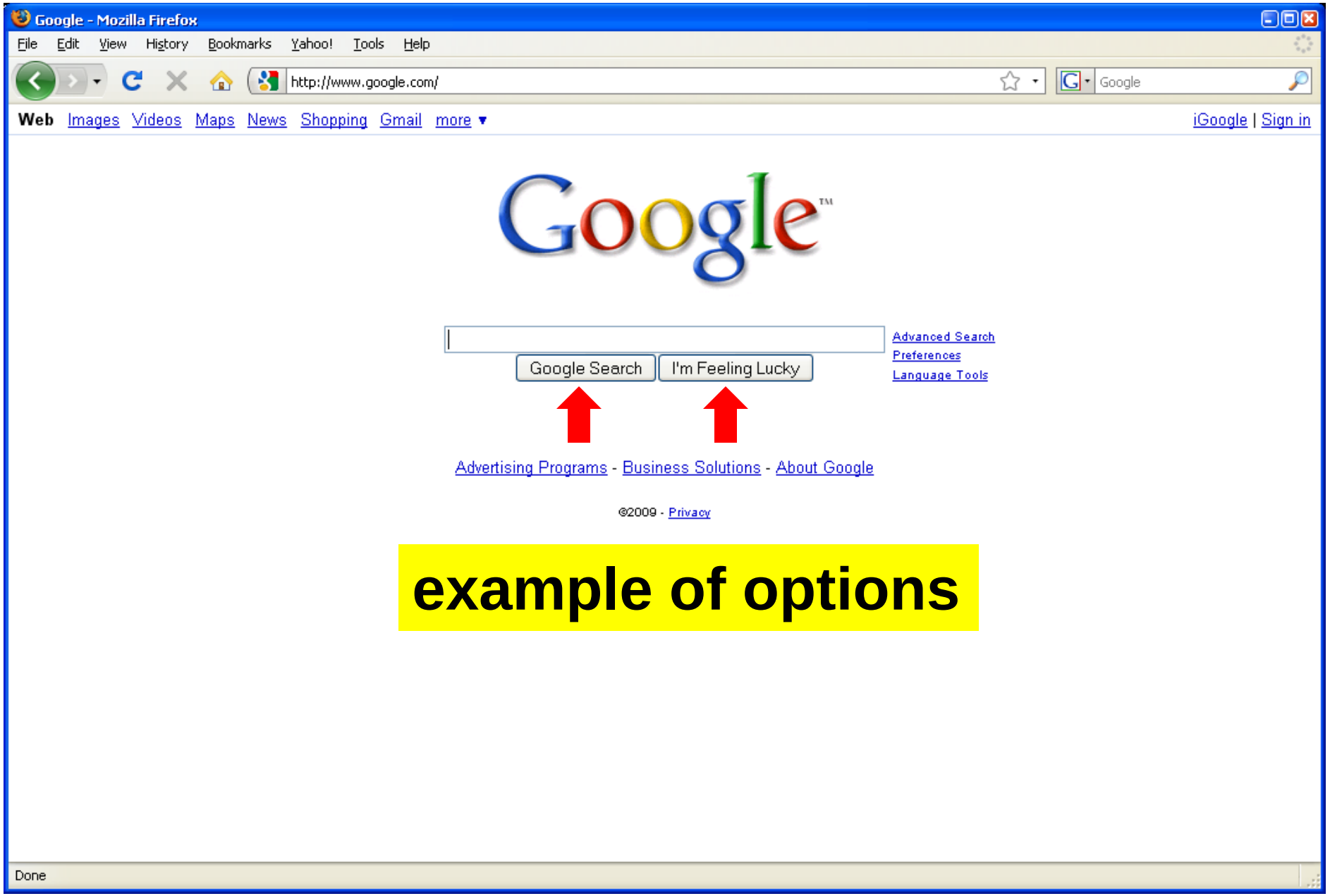
Flow Control
if, switch, for, while

Yung-Hsiang Lu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iGoogle | Sign in
Google™
Advanced Search
Preferences
Language Tools
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I'm Feeling Lucky
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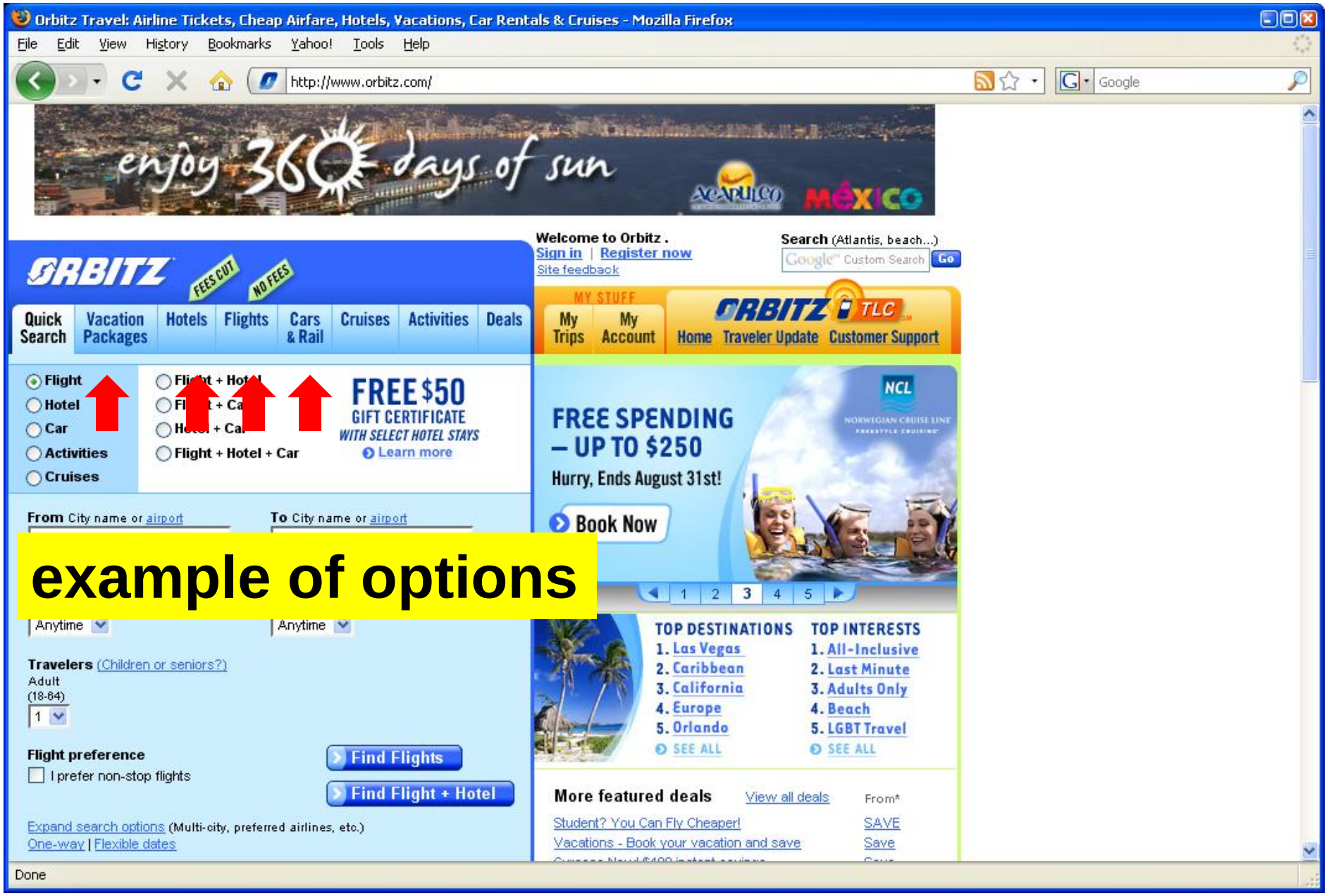
example of options
Done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My Account
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Hotel
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Cruises
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FREE $50
GIFT CERTIFICATE
WITH SELECT HOTEL STAYS
Learn more
From City name or airport
To City name or airport
example of options
Anytime
Anytime
Travelers (Children or seniors?)
Adult
(18-64)
1
Flight preference
I prefer non-stop flights
Find Flights
Find Flight + Hotel
Expand search options (Multi-city, preferred airlines, etc.)
One-way | Flexible dates
FREE SPENDING
– UP TO $250
Hurry, Ends August 31st!
Book Now
NCL
NORWEGIAN CRUISE LINE
1 2 3 4 5
TOP DESTINATIONS
1. Las Vegas
2. Caribbean
3. California
4. Europe
5. Orlando
SEE ALL
TOP INTERESTS
1. All-Inclusive
2. Last Minute
3. Adults Only
4. Beach
5. LGBT Travel
SEE ALL
More featured deals
View all deals
From*
Student? You Can Fly Cheaper!
SAVE
Vacations - Book your vacation and save
Save
Done

Amazon.com: Online Shopping for Electronics, Apparel, Computers, Books, DVDs & more - Mozilla Firefox
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http://www.amazon.com/
Google
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Hello. Sign in to get personalized recommendations. New customer? Start here.
FREE 2-Day Shipping on college essentials
Sponsored by Canon Printers
Your Amazon.com | Today's Deals | Gifts & Wish Lists | Gift Cards
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Shop All Departments
Search All Departments
GO
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Home & Garden
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Toys, Kids & Baby
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Sports & Outdoors
Tools, Auto & Industrial
Kindle Now Only $299
3G wireless means books in less than 60 seconds. No monthly fees, service plans, or hunting for Wi-Fi hotspots. Over 300,000 of the most popular books, newspapers, magazines and blogs available.
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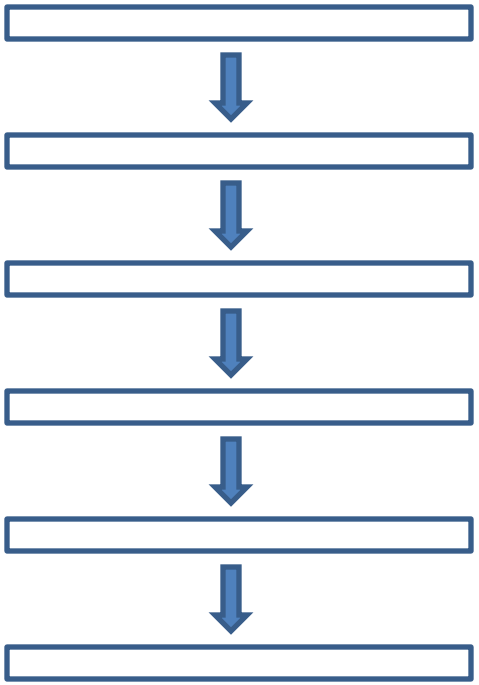
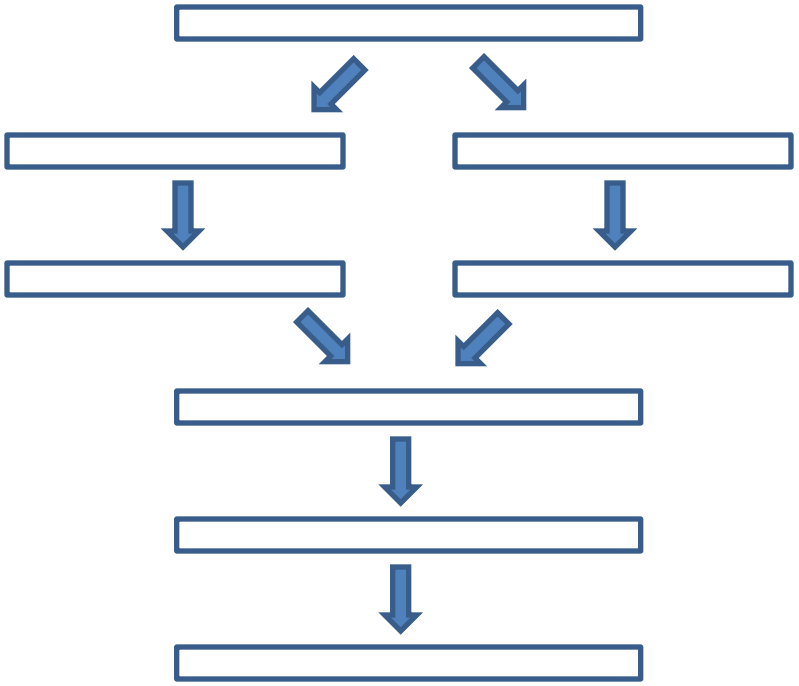
Textbooks
Save up to 30% c
up to 90% off use
Get FREE Two-Da
three months wit
of Amazon Prime.
Shop textbooks
Check This Out
New and Used Textbooks
Discover big savings and fast shipping.
Back to School
School Supplies
Shop by grade for pens, calculators, paper, and more.
Your Amazon Ad Contest
The Hottest BlackBerry Devices Available
BlackBerry Bold 9000 Phone, Black (AT&T)
BlackBerry Storm 9530 Phone, Black
BlackBerry Curve 8310 Phone, Titanium
Free Song of the Day
Transferring data from d3dtik4dz1nejo.cloudfront.net...

Program Flow

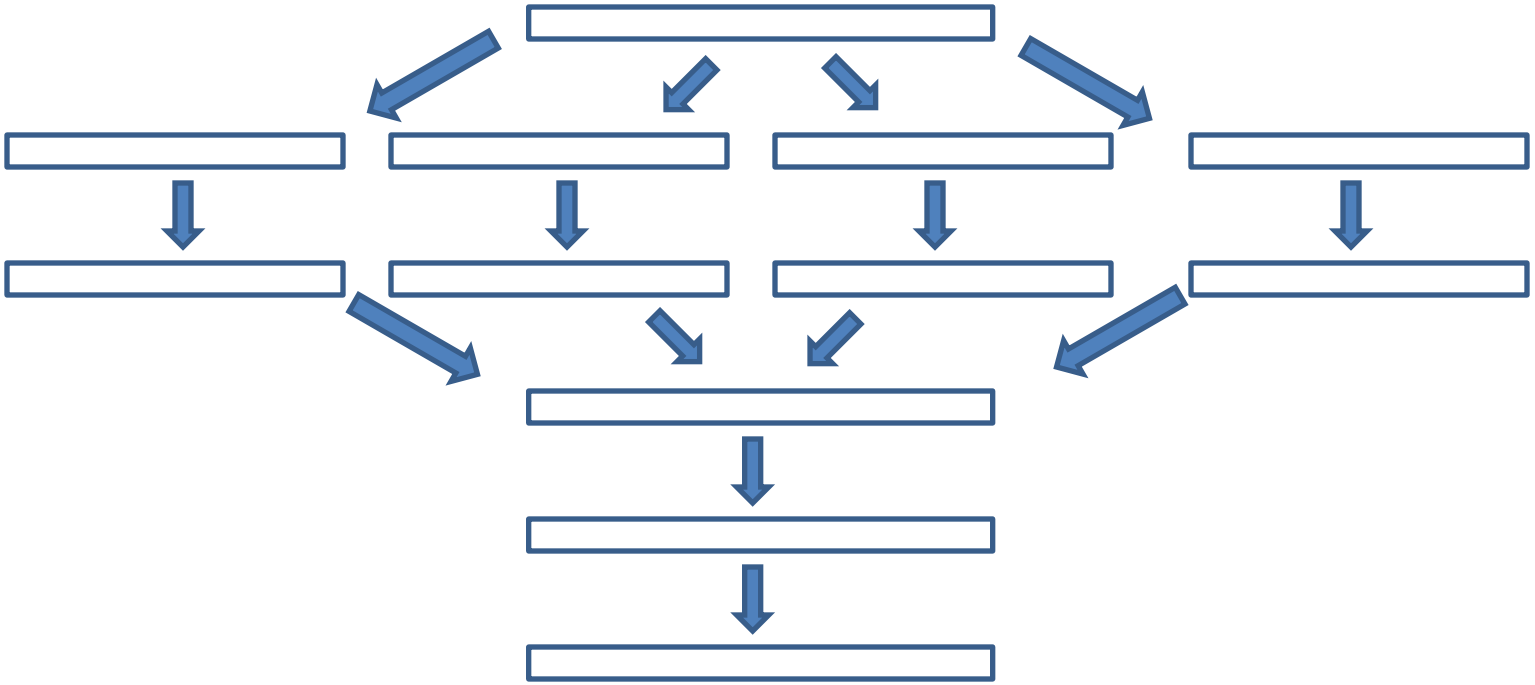


sequential flow

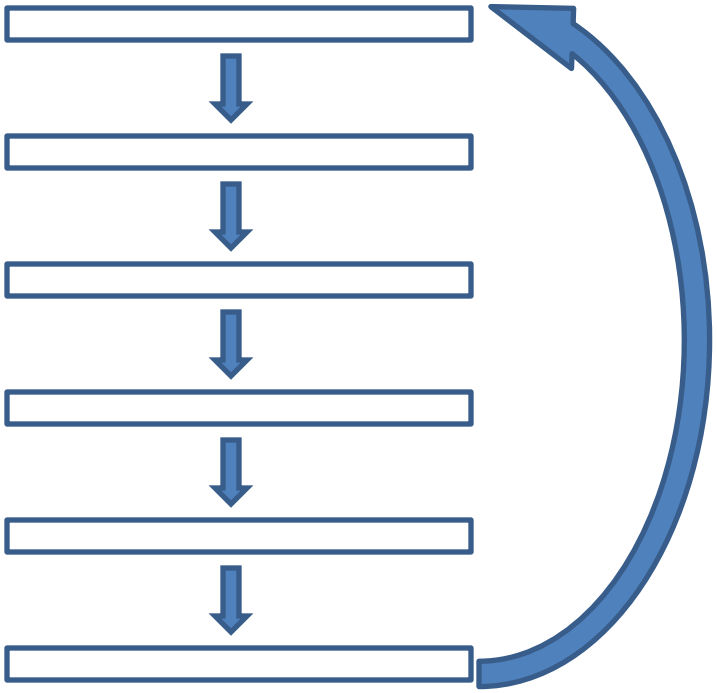


branch and merge
(2-way)

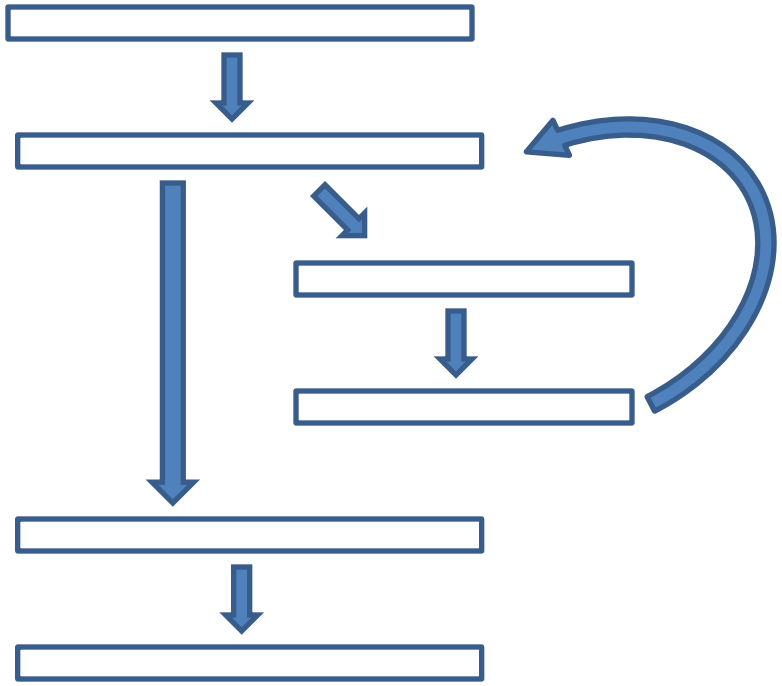
Multi-Way Branch



Repetition

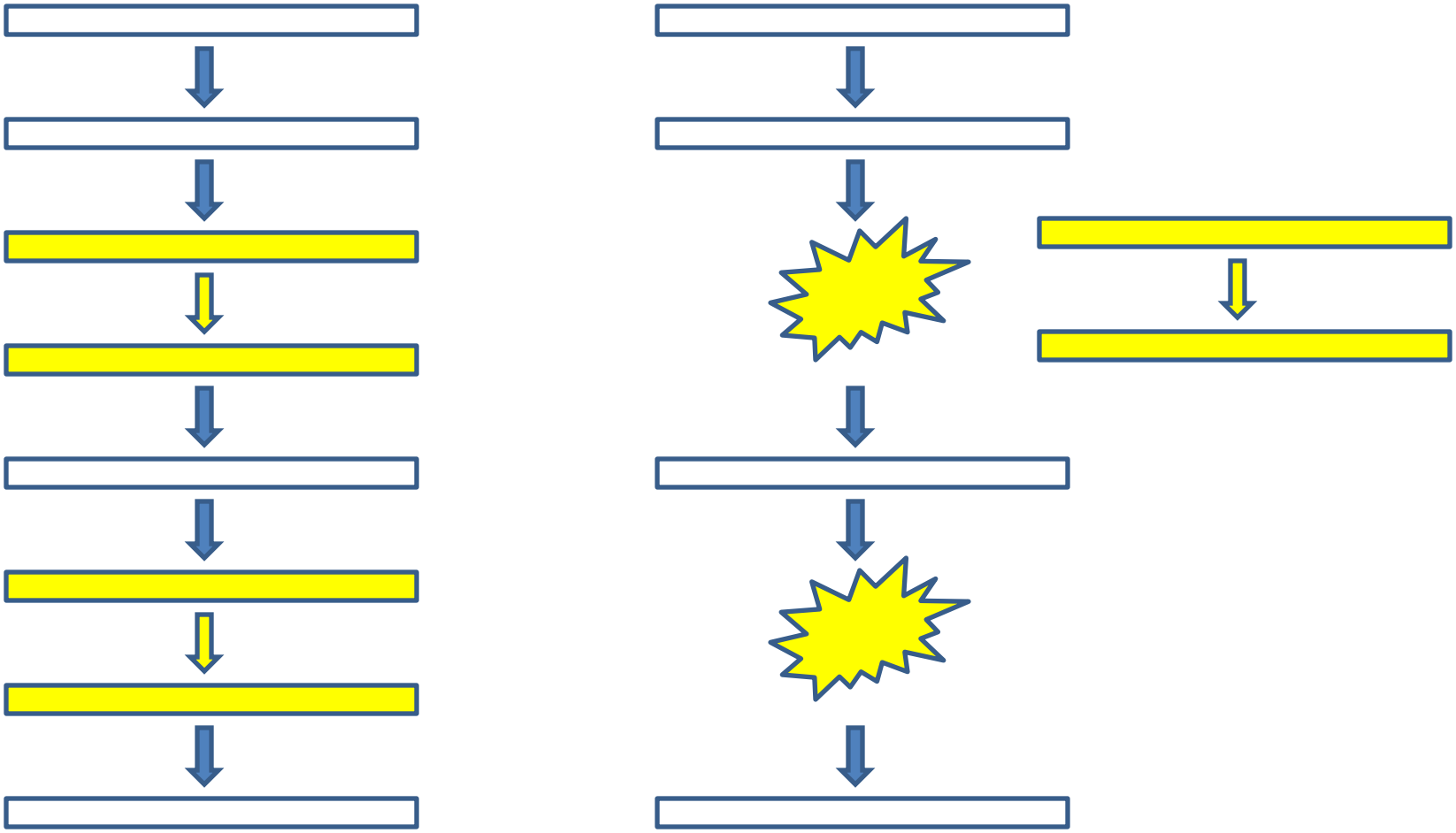


repetition

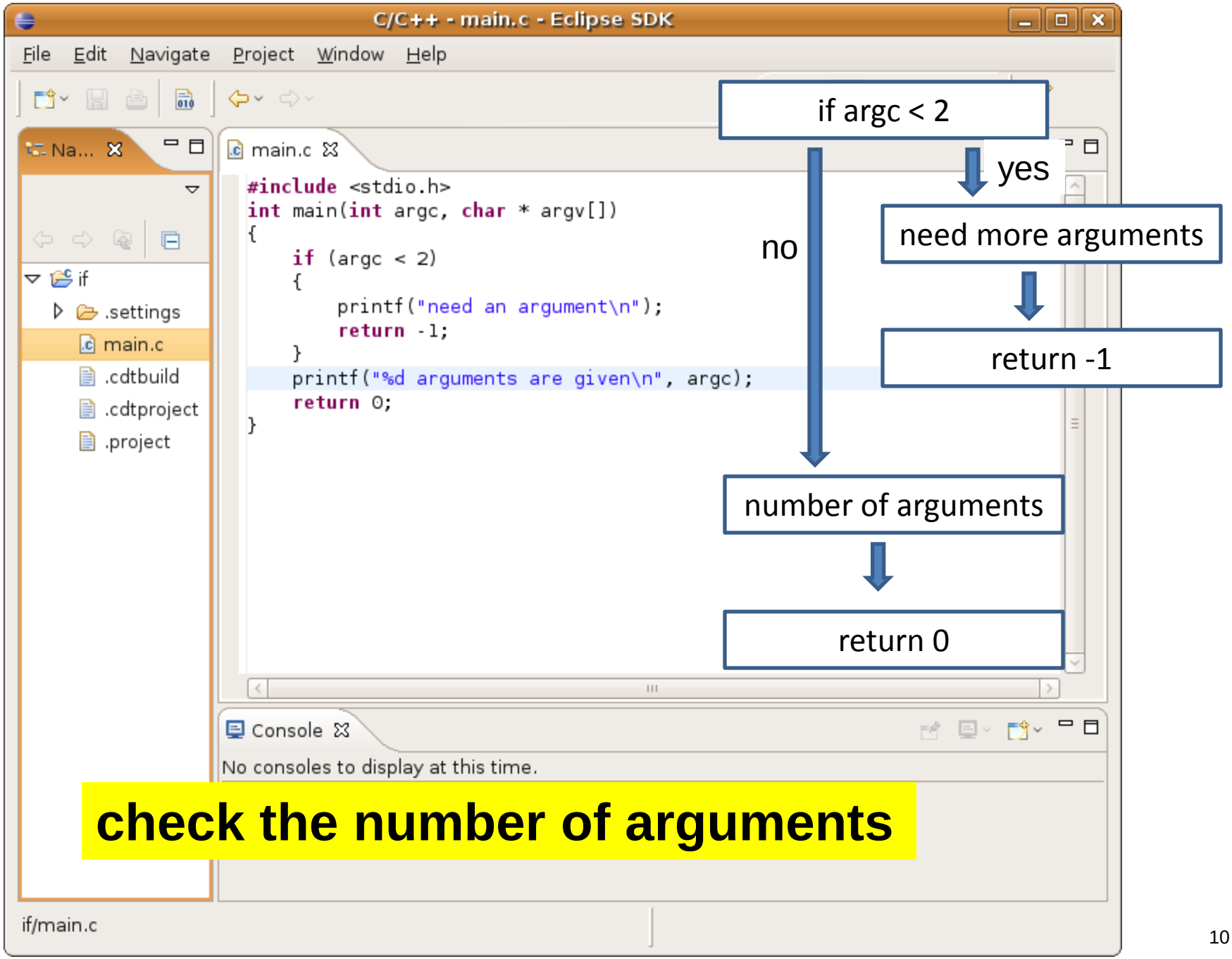


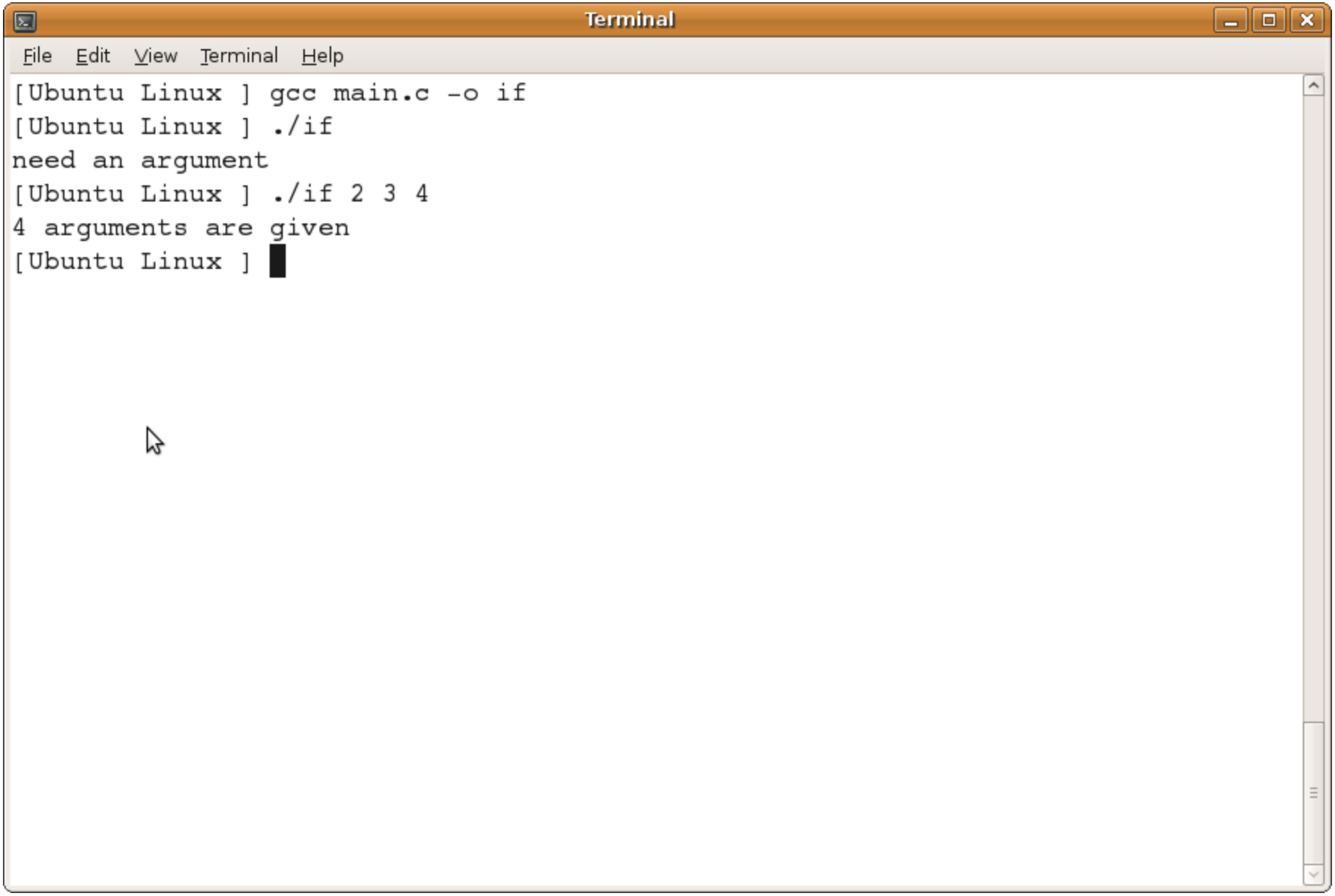
conditional repetition

Code Reuse

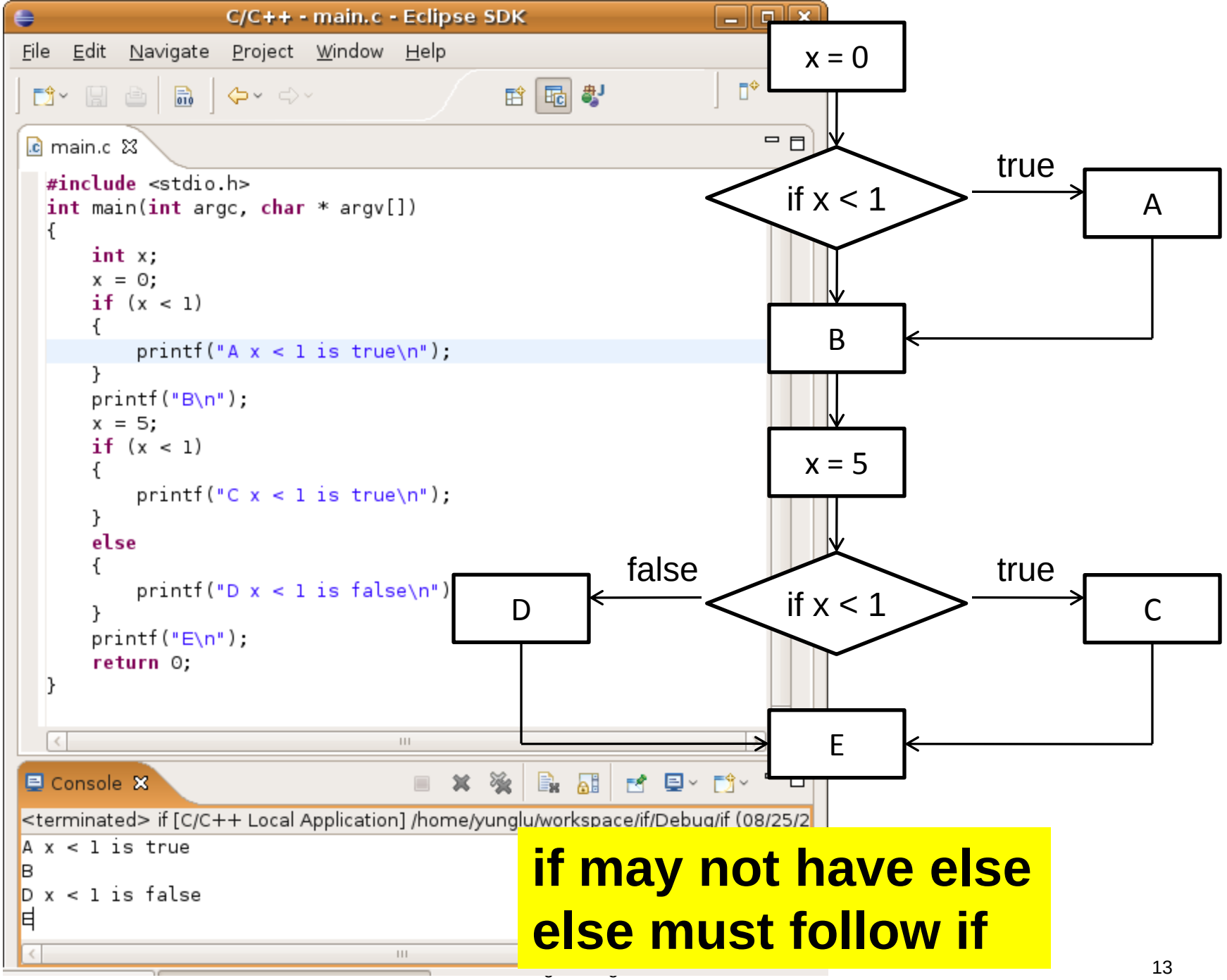


if
check argc's value


C/C++ - main.c - Eclipse SDK
File Edit Navigate Project Window Help
main.c
#include <stdio.h>
int main(int argc, char * argv[])
{
if (argc < 2)
{
printf("need an argument\n");
return -1;
}
printf("%d arguments are given\n", argc);
return 0;
}
if
.settings
main.c
.cdtbuild
.cdtproject
.project
Console
No consoles to display at this time.
if/main.c
if argc < 2
yes
need more arguments
return -1
no
number of arguments
return 0
check the number of arguments

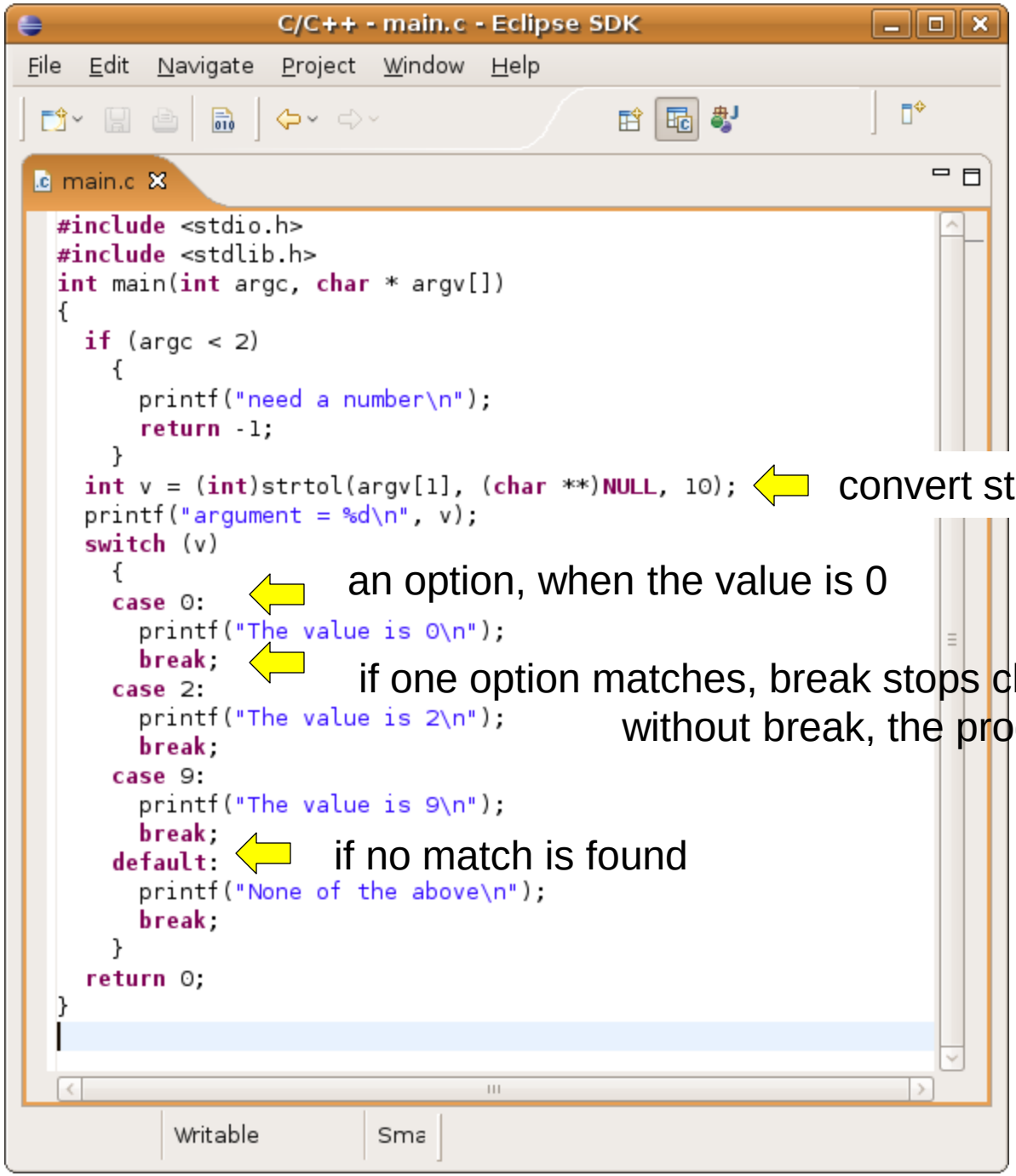

Terminal
File Edit View Terminal Help
[Ubuntu Linux] gcc main.c -o if
[Ubuntu Linux] ./if
need an argument
[Ubuntu Linux] ./if 2 3 4
4 arguments are given
[Ubuntu Linux]

if - else



if may not have else
else must follow if

switch
multiple and exclusive options



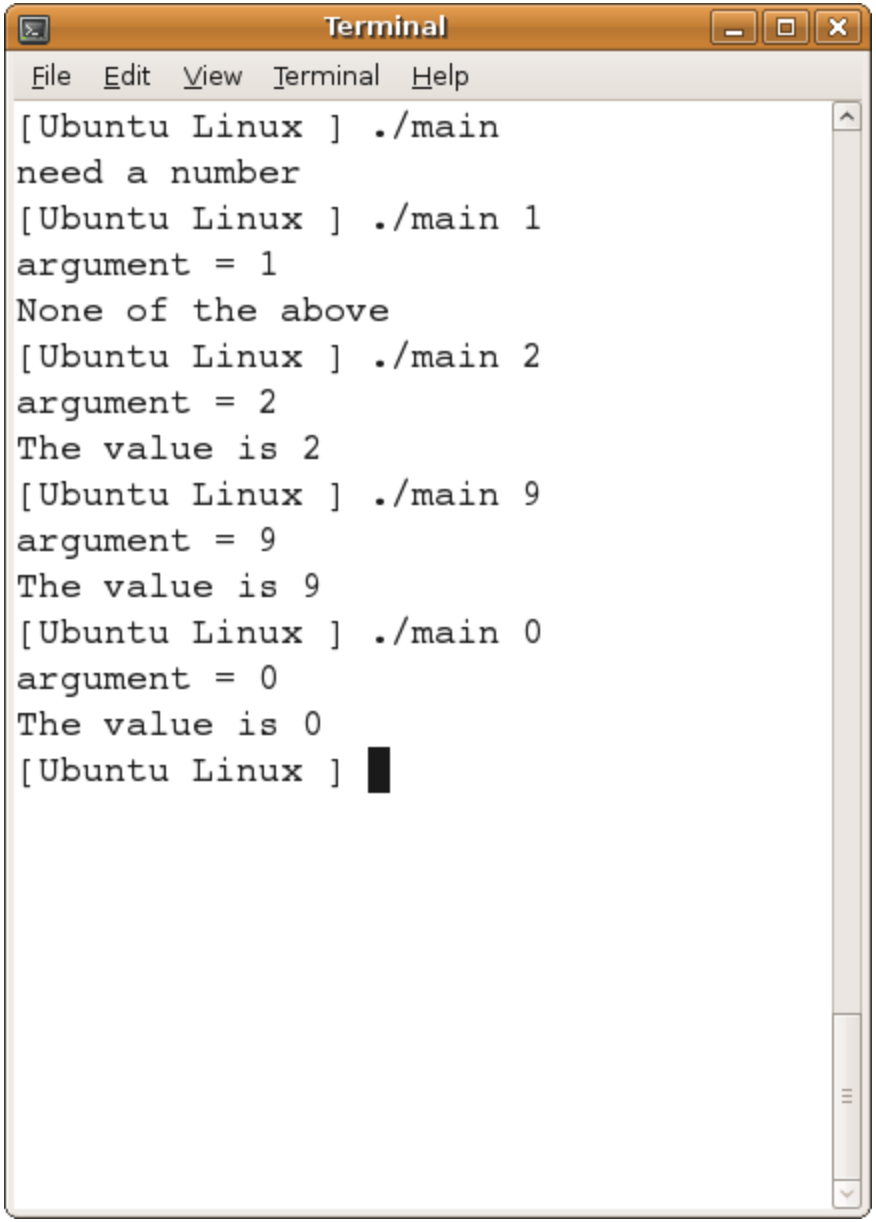
convert string to integer (base 10)

an option, when the value is 0

if one option matches, break stops checking other options

without break, the program keeps checking

if no match is found


Terminal
File Edit View Terminal Help
[Ubuntu Linux] ./main
need a number
[Ubuntu Linux] ./main 1
argument = 1
None of the above
[Ubuntu Linux] ./main 2
argument = 2
The value is 2
[Ubuntu Linux] ./main 9
argument = 9
The value is 9
[Ubuntu Linux] ./main 0
argument = 0
The value is 0
[Ubuntu Linux]

convert switch to if - else

Terminal

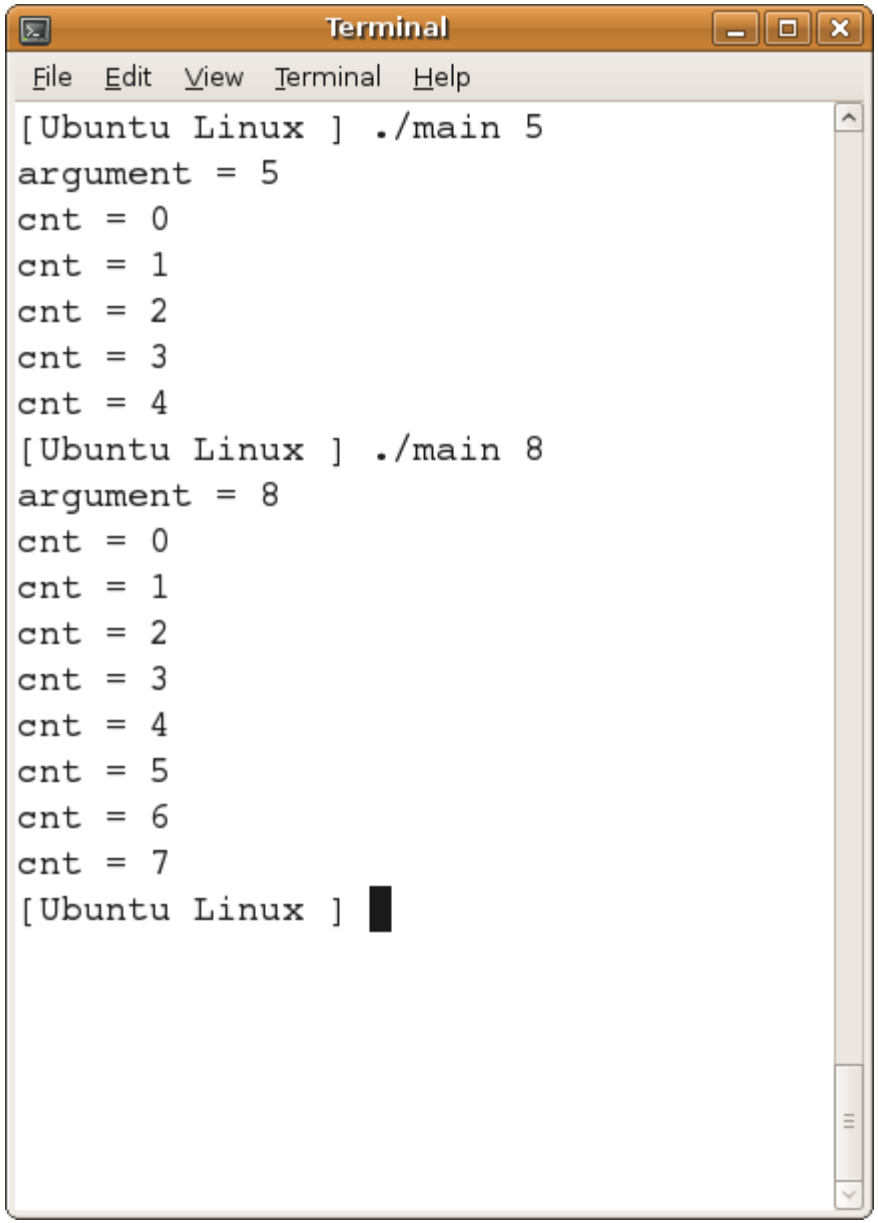
File Edit View Terminal Help

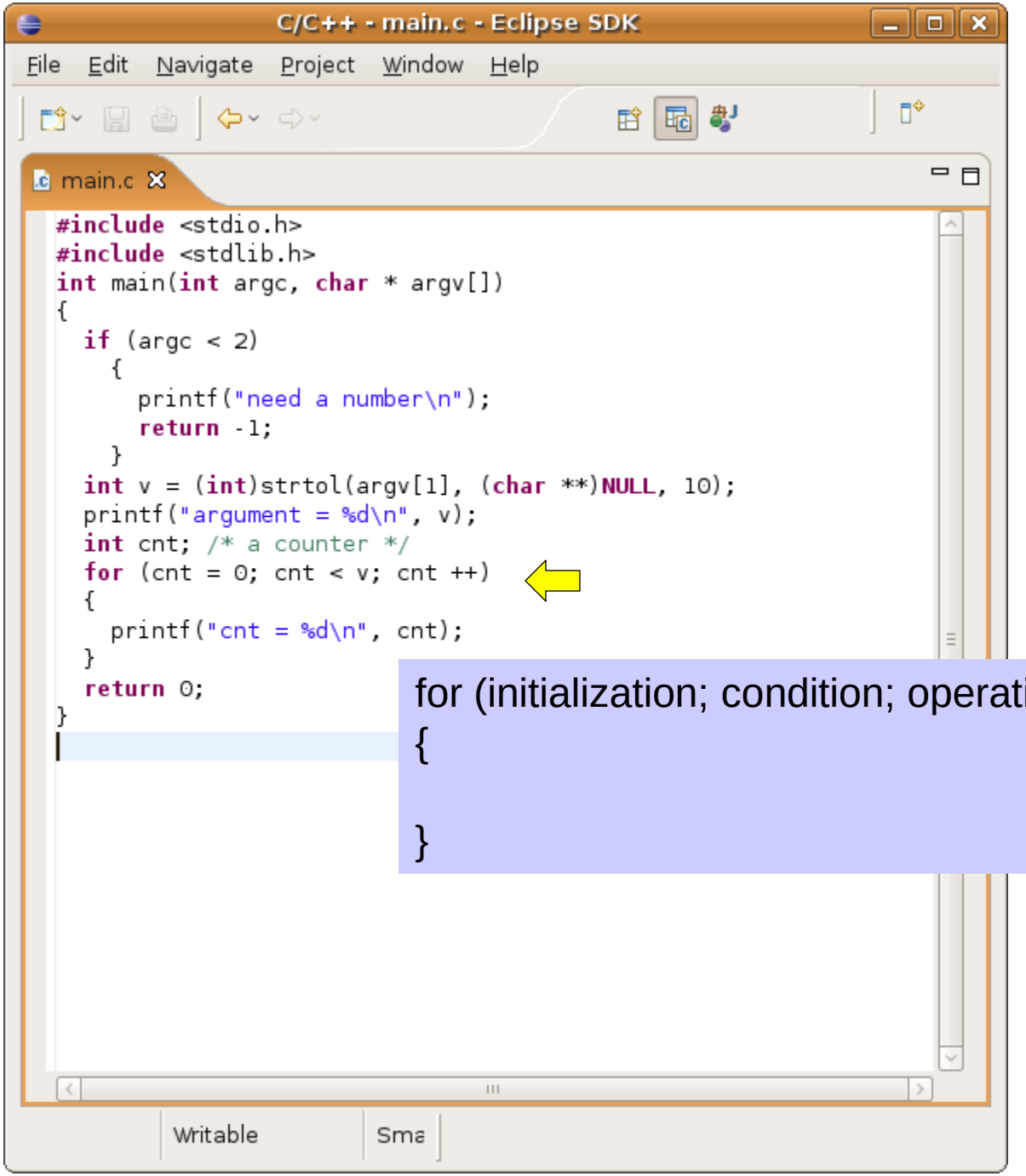
```
    return -1;
  }
int v = (int)strtol(argv[1], (char **)NULL, 10);
printf("argument = %d\n", v);
if (v == 0)
  {
    printf("The value is 0\n");
  }
else
  {
    if (v == 2)
      {
        printf("The value is 2\n");
      }
    else
      {
        if (v == 9)
          {
            printf("The value is 9\n");
          }
        else
          {
            printf("None of the above\n");
          }
      }
  }
return 0;
```

switch is equivalent to a series of if - else

for

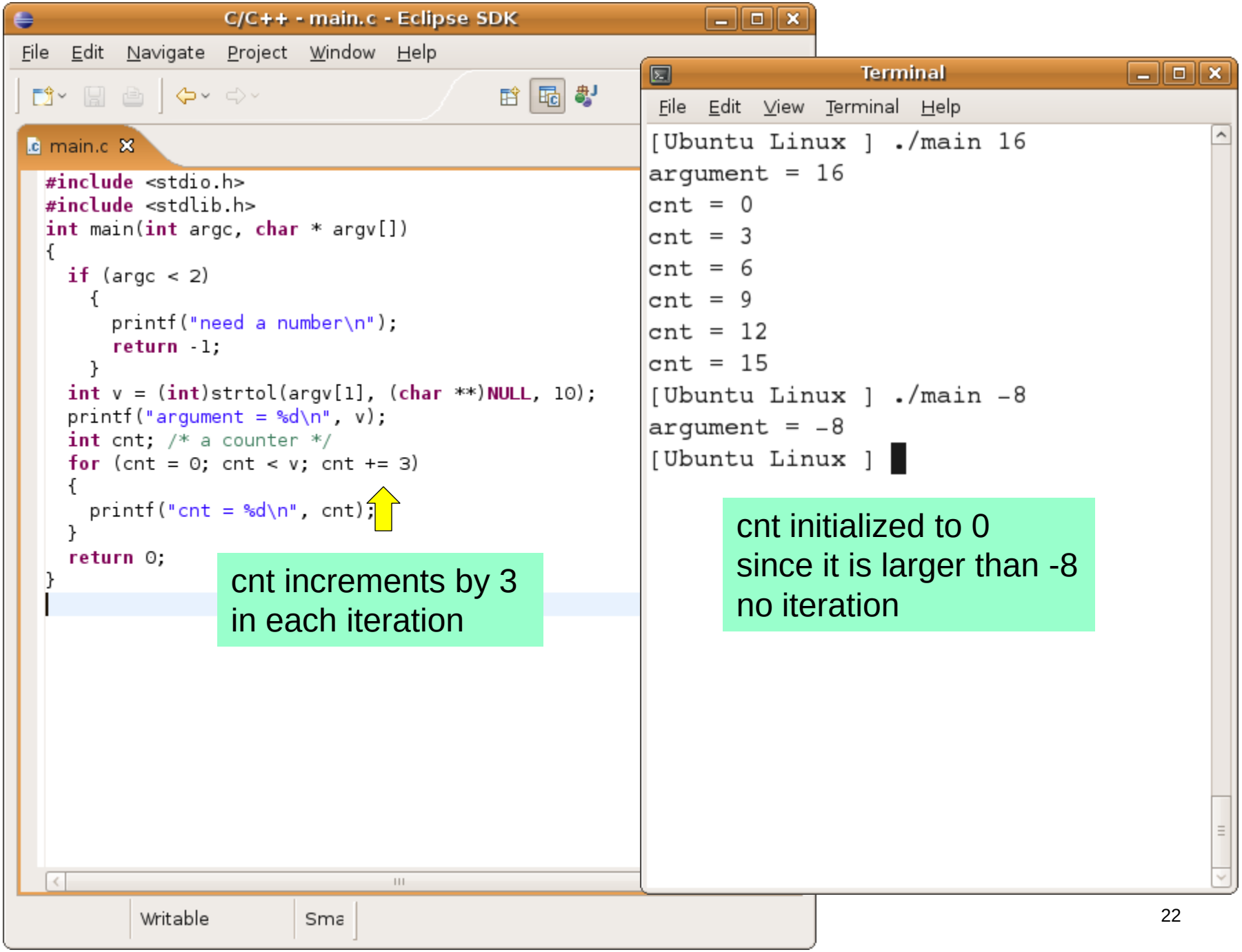
repeat a fixed (known) number of times


Terminal
File Edit View Terminal Help
[Ubuntu Linux] ./main 5
argument = 5
cnt = 0
cnt = 1
cnt = 2
cnt = 3
cnt = 4
[Ubuntu Linux] ./main 8
argument = 8
cnt = 0
cnt = 1
cnt = 2
cnt = 3
cnt = 4
cnt = 5
cnt = 6
cnt = 7
[Ubuntu Linux]



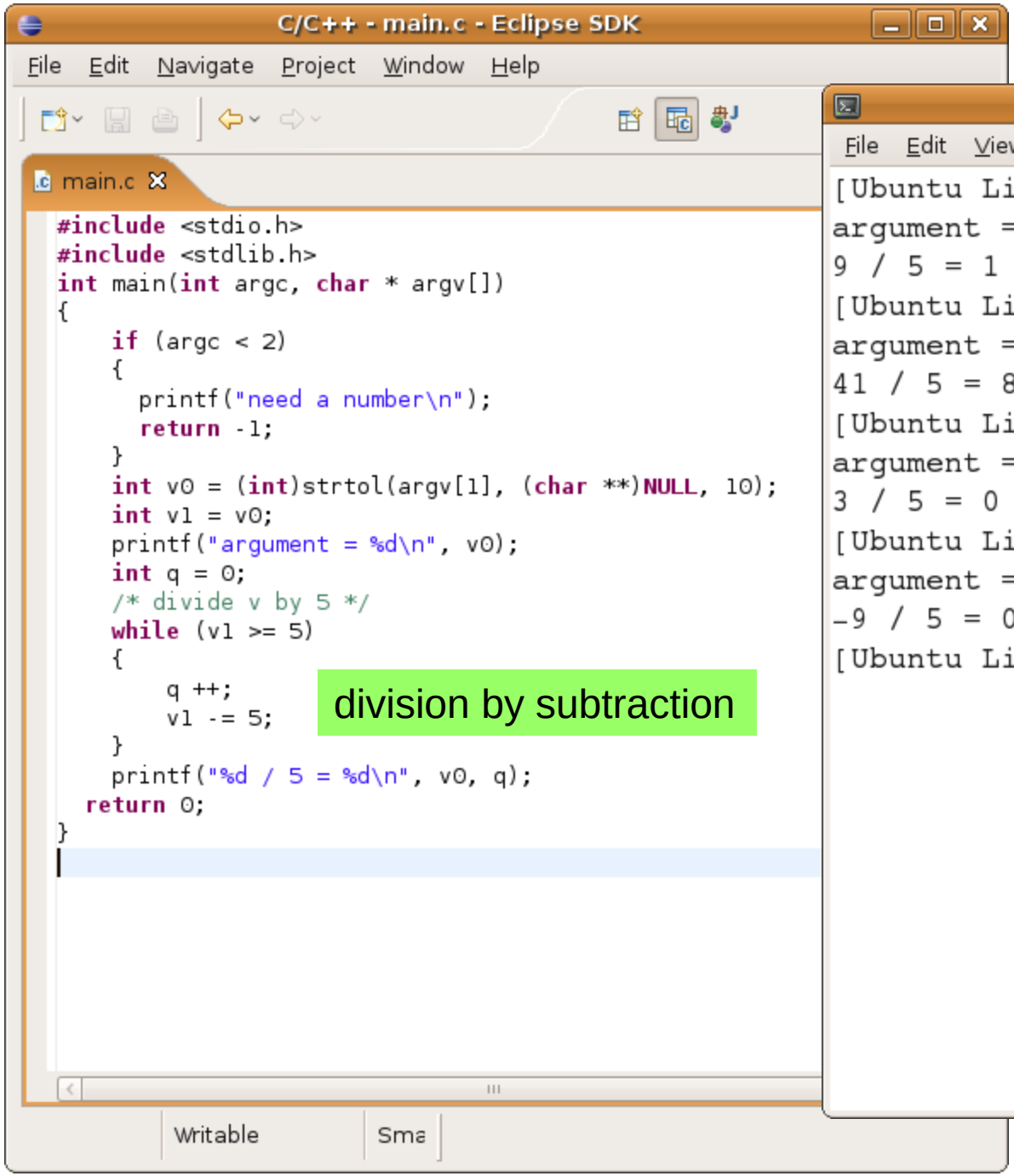
for (initialization; condition; operation in each iteration)
{

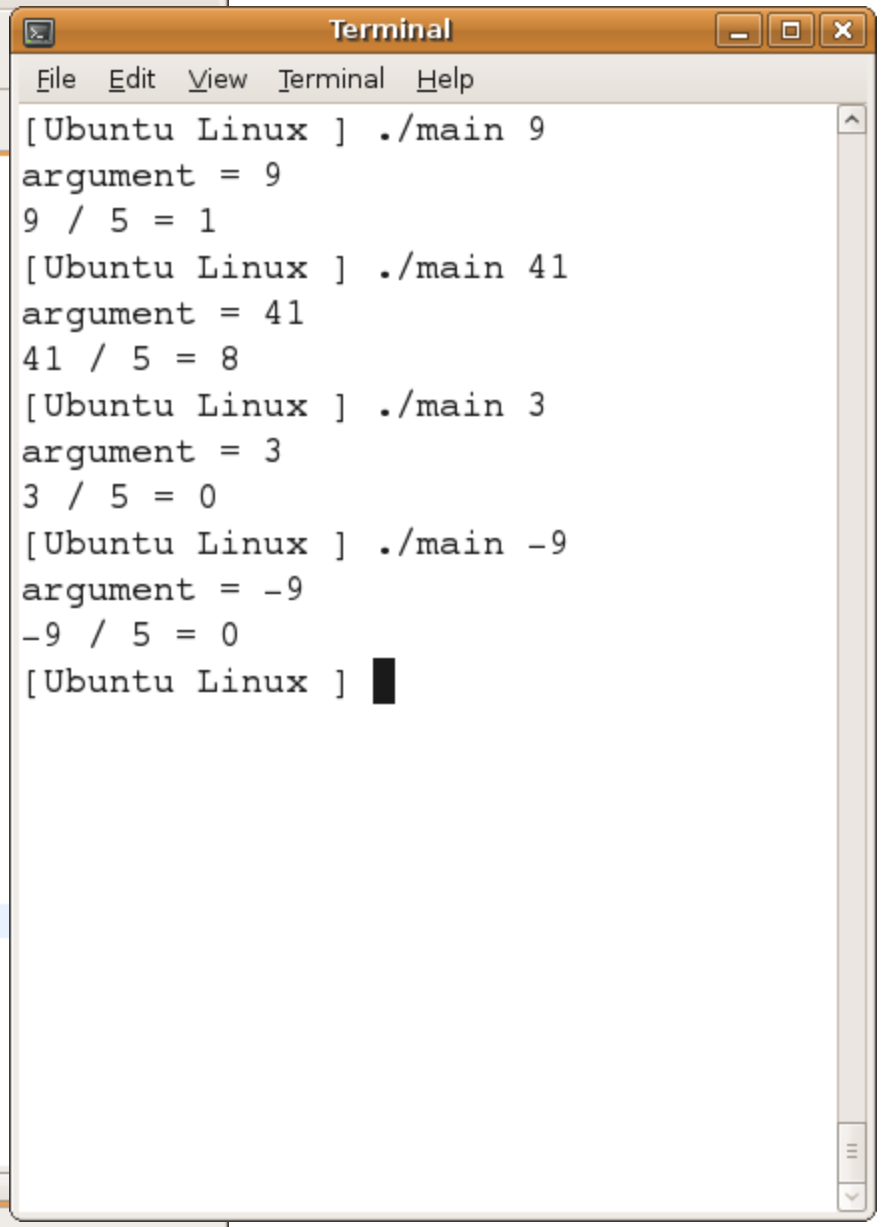
}


C/C++ - main.c - Eclipse SDK
File Edit Navigate Project Window Help
main.c
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char * argv[])
{
if (argc < 2)
{
printf("need a number\n");
return -1;
}
int v = (int)strtol(argv[1], (char **)NULL, 10);
printf("argument = %d\n", v);
int cnt; /* a counter */
for (cnt = 0; cnt < v; cnt += 3)
{
printf("cnt = %d\n", cnt);
}
return 0;
}
cnt increments by 3
in each iteration
Writable
Terminal
File Edit View Terminal Help
[Ubuntu Linux] ./main 16
argument = 16
cnt = 0
cnt = 3
cnt = 6
cnt = 9
cnt = 12
cnt = 15
[Ubuntu Linux] ./main -8
argument = -8
[Ubuntu Linux]
cnt initialized to 0
since it is larger than -8
no iteration

while

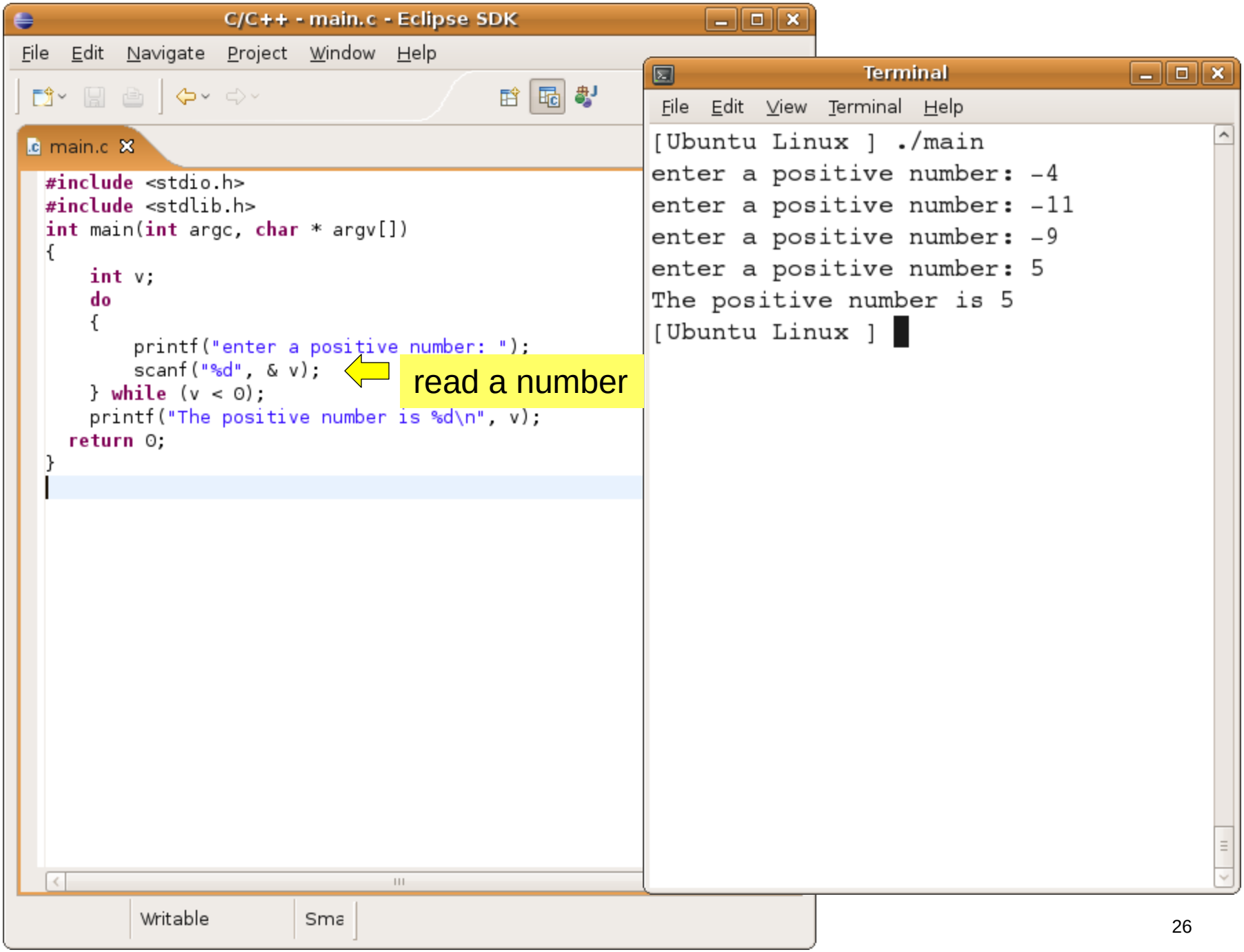
the number of iteration is not known in advance


C/C++ - main.c - Eclipse SDK
File Edit Navigate Project Window Help
main.c
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char * argv[])
{
if (argc < 2)
{
printf("need a number\n");
return -1;
}
int v0 = (int)strtol(argv[1], (char **)NULL, 10);
int v1 = v0;
printf("argument = %d\n", v0);
int q = 0;
/* divide v by 5 */
while (v1 >= 5)
{
q ++;
v1 -= 5;
}
printf("%d / 5 = %d\n", v0, q);
return 0;
}
division by subtraction
Writable
Sma


Terminal
File Edit View Terminal Help
[Ubuntu Linux] ./main 9
argument = 9
9 / 5 = 1
[Ubuntu Linux] ./main 41
argument = 41
41 / 5 = 8
[Ubuntu Linux] ./main 3
argument = 3
3 / 5 = 0
[Ubuntu Linux] ./main -9
argument = -9
-9 / 5 = 0
[Ubuntu Linux]

do - while

at least once but the number of iteration is not known in advance


C/C++ - main.c - Eclipse SDK
File Edit Navigate Project Window Help
main.c
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char * argv[])
{
int v;
do
{
printf("enter a positive number: ");
scanf("%d", & v);
} while (v < 0);
printf("The positive number is %d\n", v);
return 0;
}
read a number
Writable
Terminal
File Edit View Terminal Help
[Ubuntu Linux] ./main
enter a positive number: -4
enter a positive number: -11
enter a positive number: -9
enter a positive number: 5
The positive number is 5
[Ubuntu Linux]

Which statement is correct about

```
for (cnt = 0; cnt < 10; cnt += 2)
{
  /* code */
}
```

- A) /* code */ will iterate 10 times.
- B) /* code */ will iterate 11 times.
- C) /* code */ will iterate 5 times.
- D) /* code */ will iterate 6 times.
- E) /* code */ will iterate only once.

Correct - Click anywhere to cont

Incorrect - Click anywhere to

Your answer:

You did not answer this question

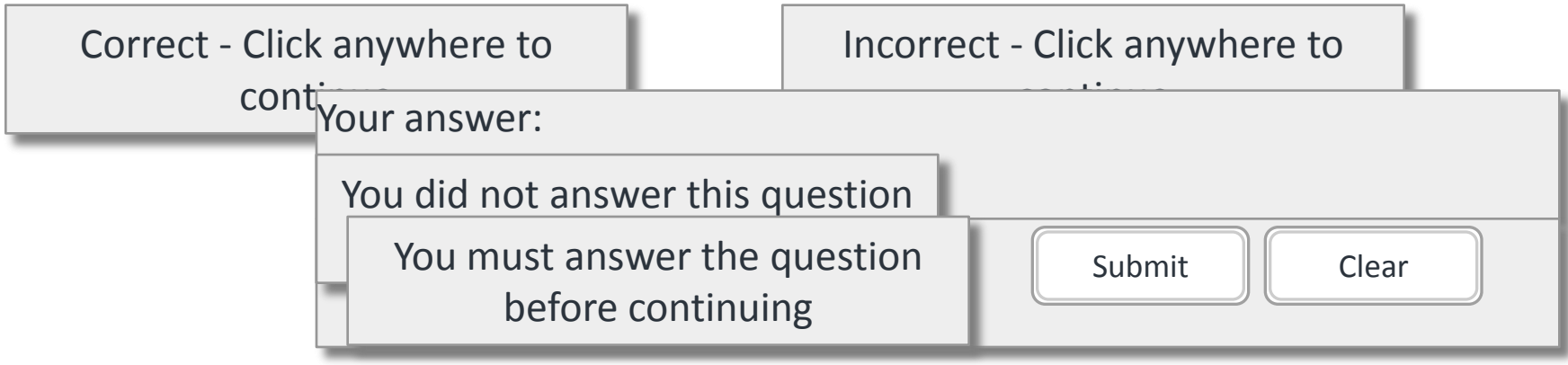
You must answer the question before continuing

Submit

Clear

Which statement is correct?

- A) "else" must follow "if".
- B) "if" must be followed by "else".
- C) "if" must be followed by zero, one, or two "else".
- D) "if" must be followed by "break".



```
int x = 0;
int y = 0;
while (y < 5)
{
   x += y;
   y ++;
}
```

What is the value of x after running the code?

Correct - Click anywhere to cont

Incorrect - Click anywhere to

Your answer:

You did not answer this question

You must answer the question before continuing

Submit

Clear

Flow Control

Your Score	{score}
Max Score	{max-score}
Number of Quiz Attempts	{total-attempts}

Question Feedback/Review Information Will Appear Here

Continue | Review Quiz