

MIT- AITI Ethiopia 2007

Addis Ababa University, Ethiopia

Team:

Silvia Baptista, '07

Danielle Hinton, G

Michael Hurley, '10

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The team originally included 5 members, but one person selected to attend could not participate in the program.

Pre-Trip Activities:

We found out the members of the group in mid-May, and began meeting regularly once everyone was back in Boston approximately 1 week after graduation. Major things we did before we left were:

1. We wrote the application form for students in Ethiopia to fill out to enter the program.
2. Communicated with Fitsum, the IT guy at the University, who posted an application form which the students printed and returned to him.
3. We decided on lab assignments.
4. We decided who would do what lectures.
5. We began development of the final project.

Packing:

Since laundry is done so frequently, most of us brought no more than about 2 weeks worth of clothes. Addis in July and August is in winter / the rainy season. Water proof shoes/boots are a must. As are closed toed shoes/sneakers for walking around when its not raining since the city is very dusty. Other good things to pack include: waterproof coat, umbrella, hand sanitizer, bug repellent for weekend trips (not needed while in Addis), unlocked tri-band cell phone, at least 2 pairs of jeans, clothes for layering, warm pajamas (cold nights), any toiletries you need since you wont be able to find the same things here Also, if there is some snack you love, best to bring it. Also, you need at least 2 towels, and bringing your own sheets (and possibly an extra top or bottom sheet for traveling) makes the stay and travel more comfortable. Also, there are no shower curtains in Ethiopia. It's a good idea to bring shower shoes, and an additional pair of water proof house shoes/flip flops so you don't track mud from your regular shoes onto the often wet bathroom floors.

Getting there:

The team flew Ethiopian airlines to and from Addis Ababa, Ethiopia through the Bole airport. Silvia, Ammar and Michael arrived on July 11th, and were met by the family of Bruck Assefa (MIT-AITI '06). Danielle arrived a few days later on July 14th. By flying Ethiopian airlines, domestic flights were discounted. Ethiopian Airline is a nice airline, and highly recommended if it comes with discounts on domestic flights. We got about a 50% discount on our flights to the North, (\$470 originally, we paid \$238). It would have taken 2 days to drive to just one of the northern cities, so the cost of the 4 flights (ADD-AXM, AXM-LLB, LLB-GNR, BHJ-ADD) was worth it.

Accommodations:

Accommodations were arranged through the family of Bruck Assefa. We stayed at a guest house, owned and operated by Shewanesh Zejo, located in the Tele-Bole region of Addis, which is named for the Telecommunications Building at the center of the area. Our "mamita's" (does all the household work) name is Zwadenesh, and she's from Lalibela. The guest house is about 5 minutes from the airport. Included in the \$3000.00 price was 7 weeks of lodging, cleaning (daily), laundry (every other day when its not raining since clothes air dry), and cooking (team purchased groceries, as many meals as you want per day). Laundry is done by hand and hung to dry. The area is Addis is wealthy, and very safe and comfortable. Within a 5 minute walk of the house are several Kiosks where you can buy things ranging from canned goods to toilet paper to candy. Also at most 5 minutes away is a stand to buy fresh vegetables. Also within a 5 minutes walk is an Internet Café, coffee shops and plenty of restaurants.

Money:

Nearly everything in Ethiopia is paid for in cash. The family of Bruck Assefa helped us get to Mercato where money can be exchanged at a high conversion rate in to the local currency (birr). Most of us converted \$350 – \$450 on arrival. Additional money was withdrawn from the ATM at the Sherton.

Getting around:

We learned the system of mini-busses with help from Shawanesh and Bruck's Aunt. The cost to get to the faculty was 1.30 birr (Tele – Kazanchis-Arat Kilo). The cost of a taxi to the faculty was 35 birr. We also made trips different parts of Addis with the help, and often the accompaniment of Bruck's Aunt Meseret (Piazza, Post Office, Churchill Ave, Meskel Square, Ambassador). We also rented SIM cards for the summer, with the help of Meseret. Because of the Millennium celebrations, the SIM cards were no longer for sale.

Weather

It rains at some point during most days, but usually not longer than a 30 minute stint. Some days are overcast, and some days are sunny. Typically, overnight it is quite chilly (50's), then during the day it is between 60 and 70F. Daylight hours are 7 am till about 6.30pm. It's about 4-5 C higher temperatures in the southern area (Rift Valley).

The Java & Entrepreneurship Course

Course Dates: July 16 – August 24

Application Forms

A copy of the application form is shown in appendix III. We got the applications from Fitsum after we arrived to Ethiopia. There were 300 applications for 62 slots in the program. (60 slots originally, Fitsum added two more students). We sorted the applications when we arrived to Ethiopia, and chose the 60 students based on the following criteria:

1. General Computer Literacy
2. Year in school – with a preference for 4th and 5th year students (excluding grad students).
3. A range of programming backgrounds *excluding* java
4. Enthusiasm / Creativity in answering a question “why do you want to take this course.”
5. Gender – we didn’t want to have the ratio between male and female too imbalanced. In the end it was 2:1.

We did not consider applications which had been copied.

Unfortunately, on the first 2 days of classes, about 1/3rd of the class didn’t show up. Fitsum told us that students that live in the countryside often cant get to campus during the vacation period, so perhaps the missing students were in that situation. There were also students who had 3rd exams in the first week of the class. Some of them came on the 2nd and 3rd day. By the end of the first week, we admitted 15 new students to replace the 15 that did not show up. We finalized the class list in the first week, and ended up with 62 students.

On the application, we recommend being as clear as possible when you ask them to evaluate their level of computer literacy. We asked them to evaluate themselves on a scale of 1 – 10 (1-know how to use a mouse/10-knows details of XP), and no one rated themselves lower than a 5, yet we ended up with several students who had only used Microsoft word occasionally. We’d recommend taking people who have at least 1 programming class worth of experience (preferably C++), and *everyone* needs to have an email account (they don’t get accounts through the university).

Syllabus

The final syllabus is shown in appendix IV. The major changes we made were to the collaboration/plagiarism section. In the 2006 Ethiopia course, on the final lab, 50% of the students turned identical work, and tried to pass it off as their own. Because of this, both in the syllabus, and in the first lecture, we discussed what we defined as cheating, and stressed that it was not in anyone’s best interest, and that it would not be tolerated this year.

Scheduling

The final schedule is shown in Appendix V. The first three week of the course were taught concurrently with their last week of school, and their 2 weeks of exams. During the first week of the course, we did not have access to the computer lab, so we just gave lectures. We were encouraged by Fitsum to not make the course too intense until the students had more time to spend on the course. Taking both of these factors into account, we decided that the first week of the course would be lectures of the basic programming concepts (which a lot of them had seen before). Then the 2nd 2 weeks during their exams would be labs, where they could come in and reinforce what was taught in lectures. Following the suggestions of Fitsum, we allocated 2.5 hour blocks each day and told the students to choose 2 blocks (one each week during their exam period) to come and do the first 4 labs. The first 4 labs cover the introductory / review topics.

The rest of the course would be the standard 5 days/week back to back lectures and labs. Also, during the exam period, we would only have access to 16 computers in one computer lab. Fitsum told us there was a possibility that we could get access to another lab after the exam period is over.

For the entrepreneurship lectures, we decided to focus on talks from local Ethiopians who had succeeded in business. Content-wise, we compressed the AITI entrepreneurship lectures into 2 long-ish lecture in order to introduce concepts to prepare them for the business professionals, and to motivate the final project, which is discussed below.

Lectures

Week 1 (July 16 – July 20th)

In the first week, some students had 3rd exams for course which did not have final exams. To accommodate these students (~30), we made lectures from 5 – 6 pm. They were all held in room 118 of the Technology Faculty. We completed the first 6 of the AITI lectures: Intro to Java, Variables, Operators, Control Structures, Arrays, and Methods. The students seemed to know this material, and did well on the questions we asked them in lecture. One student asked us to specify any differences between what we were teaching and C++ since they knew that language already.

This week we were trying to make sure to fill all the open spots in the class. Since some students didn't show up in the first 2 classes, we rescinded some offers and made new offers of admission to the class. As a result, we had to do some admission control / checking IDs / explaining why slots were now gone, and turning away of students who were not admitted.

Week 2 (July 23-July 27)

We did not have lectures this week because of exams. Instead we had Labs 0, Lab 1, Lab 2. This worked well for the students since they had exams during this time, and because most of the students know C++, this material was review.

Week 3 (July 30 – Aug 3)

Because of Exams, we did not have lectures on M-R. On Friday, we had a long lecture introducing classes and objects. Where we had thought that all the students were finished with courses this past Thursday, we found out that 5th year students (about 50% of our students) have their final project defense and final project demonstration next Monday and Tuesday. Since the 5th years were still busy with their projects, the lecture on Friday was only ½ full.

Week 4 (August 6 – 10)

We had lectures this week on Tuesday, Wed, and Friday. Monday, we didn't have lecture since the 5th years at their thesis presentation. Wednesday was the exam review and the introduction to entrepreneurship. Thursday we had the first Exam. The material covered on Tuesday we did not put on the exam. The material introduced on Friday (ArrayLists, Iterators, Inheritance) would be on the lab that we posted Friday, and the following lab.

The exam was open book. The exam required mostly on the spot thinking, so the notes wouldn't help that much, but might make the students feel more comfortable – especially given the slight (written) language barrier. (spoken English is fine; writing and reading comprehension is less so). The mean on the exam was 63 out of 97 pts, and the std. dev was 17. We were quite pleased with these results. 44 students took the exam. We sent email to all the students before the exam making clear that there would be no make up exams, so that if they wanted to participate in the course, they'd need to be at the exam.

We also had the students divide themselves into final project groups, and explained the Business Plan portion of the final project and that they'd need to come up w/ a Business idea / product / service that they would then implement in Java for their final project. We'll give them a full example / demonstration on Monday.

Week 5: (August 13 – Augusts 17th)

We had lecture this week on M, T and W covering the last topics of the course: Exceptions, File I/O and Swing. Attendance to the lectures was between 50 and 80 % (total of 43 students in the course since anyone who did not show up for the exam, we did not allow to remain in the course). We found out this week that there are several other lab courses being taught to mostly 3rd and 4th year students. On several occasions, students have come to lab, having not been in lectures, and said they were in another lab course.

Week 6: (August 20 – 24)

On Monday we had Zelalem Gizachew from the Clinton Foundation come and speak to our students about his work. He is a part of the CSHOR group, which applies computer modeling and simulations to increase efficiency in the delivery of drugs to combat AIDS. On Tuesday we had another guest lecturer, Amanuel Alemayehu. He founded a local start up company called BITS, which stands for Bedrock IT Solutions. Since our final project dealt with creating a software tool, we thought this local entrepreneur would be ideal to motivate the final project. On Wednesday we gave the exam 2 review lecture and

helped students complete their labs. While giving the exam on Thursday, we found out that the test was a little too long. None of the students had turned their tests in after 2 hours, so we extended the exam time by 30 minutes. Several students still could not finish the last couple questions. After grading the test, we found out that the average was around a 61%, with a standard deviation of about 19%.

We decided to give out certificates to people who have completed at least the first 6 labs, taken both exams, (regardless of their scores) and submitted their business proposals. Friday was our last class, where we had our students present their proposals, along with a code model and a picture of their GUI application. We were impressed with the amount of work they put into their PowerPoint slides. We gave out the certificates after that, 31 in total. The students also all chipped in and bought each member of the AITI some gifts.

Labs

Instead of having the students turn in labs to us, we developed a Lab check off procedure where they had to demonstrate and explain all parts of the lab to an AITI team member. This helped them learn, and curbed the potential for turning in work that was not their own. We also found that we needed to shorten most labs since we had so few computers, and so many students. We strongly encouraged students to either work at home, or to come into lab at time when we were not present to finish labs and to use the time with us to get questions answered and to get checked off.

Week 1

No labs because classes were still in session, and we couldn't get access to the computer lab.

Week 2:

Labs 0 – Lab 2: We only had access to 16 computers, and the students were very busy with exams and had very little time to spend on the course. We scheduled several 2.5 hour blocks in the labs, and had students select times they could come in to reinforce the concepts from lectures. Also, none of the students had used eclipse, so we made an additional sheet introducing them to eclipse. Nearly all students could only find time to come into lab with us for one 2.5 hour block. During this time, nearly all students got through lab0, and about 1/3 (20 students) also finished lab1. We had a handful of students midway through lab2. We also had a few students who had very little exposure to computers (mostly chemical engineering students). We suspect that they either didn't quite understand the application, or misrepresented their computer background on the application form. We decided to give them until the end of week3 to see how far along in the labs they get. In week 3, we also intend to pair them, to see if that helps them make progress. If by the end of week 3 they haven't made sufficient progress and do poorly on the exam, we are considering dismissing them from the course.

In the upcoming week, we had the students sign up for two 2 hour blocks, and stressed to them that they will need to come into lab on their own time since we are so short on computers AND that they will need to read and begin the assignments at home. We told them that we would check that they had begun the work at home before they could claim a computer at lab.

Week 3:

Labs 3 & 4. Many students still had exams this week, so they didn't show up to lab in their assigned slots. Some came at other times when they were free. But about 25% of the students we only saw in one 2.5 hour block. In addition, the final year students at the university had their senior theses due on Friday, so many of them were in the lab during our lab time. We also found out this week that final year students have their final project defense next Monday, and their demonstration on Tuesday. Because of the defenses, we will not have access to a classroom on Monday, so we will have to have labs that day instead of lecture. We also have to move the exam (originally scheduled for Tuesday) to Thursday. We had a bit of give in the schedule, so hopefully this will not affect things too much. We will probably need to get all the 5th year students extended lab time after the exam on Thursday, and on Friday.

In terms of progress and proficiency in the labs, most of the students had begun lab 3 by the end of the week (we had hoped they'd finish through lab 4; only one student finished lab 4). The main consistent weakness we have seen so far are time devoted to the class (because of exams), and typing skills. We also have only 16 very slow computers which slow progress as well. Conceptually, most students we've seen are fine with these introductory/review labs (through methods). Because of exams, we're giving all the students until Wednesday to turn in labs 3, 4 and 5. After next Monday, we should have an additional 16 faster computers in another computer lab.

Week 4:

We got access to the 2nd lab on Tuesday, which was good timing since there was a crunch to finish the labs since we wanted them all to be turned in before the first exam. Most of the 5th years didn't past lab 3 because of their thesis presentations. We announced that the labs were due, but that 5th years in particular could come talk to us because we recognized their time constraints. Unfortunately, it was still very apparent that there was quite a bit of cheating / code copying going on. We made several announcements this week regarding cheating. Still, however, from lab check offs, its clear that many students are copying the work of others. In terms of a policy, we decided that the first time we caught them cheating, we'd give a stern warning that if it happened again, we would not allow them to take part in the course. Unfortunately, we had to dismiss two students from the course this week.

Week 5:

We had high hopes this week that the students would devote quite a bit more time to the course, especially as the material was getting harder. Some students did keep up with the lab assignments. But we found the most did not. We found out that several of our 3rd and 4th year students were also taking another lab course, and so during lecture time and lab time, were in that lab course. We decided to just make all the remaining labs due at the end of the course, in order to discourage cheating for a lack of time and since students were busy with other things. Because of this, we also are not giving out solutions to the labs till exam time. In preparation for last exam, we released the solutions for the first 5 labs. We found the many of the 5th year students, to whom we gave extensions since they had their senior theses due, tried to hand in solutions that were identical to our solutions.

By the end of the week about 75% of students had turned in lab 6, and were well into lab 7 (Interfaces, File I/O, Exceptions). We had hoped people would at least start lab 8 (swing) by Thursday/Friday so that they could also have significant time to work on the final project. We also had an extra day of lab this weekend to facilitate this. By the end of the lab time on Saturday, many of the students who came in were in the final (and hardest) question on lab 7.

This Week we also had the students turn in a draft of their Business Plans, which are part of their final projects. Of the 6 groups, we received 4 submissions. The creativity of the plans are fantastic; but the content / answering the questions we posed to them, is not as strong as we would have liked. Many did not answer the question we asked on details on what their software tool will do. We ask for a code model in part II of the final project, so we expect more detail there. We are also going to give them some feedback on the final project drafts, and hopefully, the final business plan submissions will have more substantial content.

Week 6:

This week, as always, we held lab from 3-6 after our lectures. We set a deadline for Thursday for our students to complete at least up to lab 6. This was one of the criteria in order for them to receive a certificate. We were very happy that all of our regular students were able to meet this deadline.

The students also presented their business proposals, complete with a code model and a picture of their GUI application on Friday. We were very impressed with the amount of work that they put into the presentations Many were not only well thought out, but presented very professionally as well. All groups had the required code model and GUI application.

Final Project

Specifications: Your final project will combine the Entrepreneurship ideas and the Java programming skills you have developed during this course. In teams of 6-7, you will be generating a business plan to meet a product or service need in your country that you identify. This business plan will include the business summary, product/service overview, market analysis of need/opportunity, marketing strategy and financial analysis discussed in lecture. The business plan specifications are described below in more detail. You will then design a software tool to implement your product/service. This software tool will use the concepts used in this course to design a graphical user interface (GUI), a database using the File I/O you have learned, and must implement a search based on at least two search fields. More detail specifications for the software tool are described below.

You will need to turn in your work to us in the following four phases, and on the following dates:

- Aug 9: List of Teams Members Due
- Aug 14: Final Project Proposal Due

- Aug 18: Final Project Code Model Due
- Aug 21: **Final Project Due (Business Plan and Software Tool)**. Please prepare a short presentation (10 – 15 minutes) which you will present to the class. This presentation should include an overview of your business plan, a code model that outlines your software, as well as an outline (a picture is sufficient) of your GUI application.

The full specifications of the Final Project are shown in the Appendix.

Student Projects

The group submissions are in the Appendix. Here is a quick outline of the project ideas:

1. Educational software that calculates geometric properties of different shapes
2. Agricultural Investment Information / Database
3. Bus Tracking System
4. Kebele database organizational software
5. Dashen Tours and Travel
6. Plate Heat Exchange Designer

Travel

July 14-16

The weekend we arrived in Addis we focused on getting things ready for the course, and learning our way around Addis. We also had lunch at the home of Bruck Assefa.

July 21-22

This weekend we spent 2 days in the Rift Valley. We rented a Jeep at 700 birr/day, and drove south and saw: Lake Ziway, Lake Awassa, Shemsene (home of Rostafarian community), and the town of Awassa. On day 2 we went to Wondo Genet and saw the hot springs, and went for a hike through the mountains; and on the way back to Addis we stopped at Lake Longano.

July 27-30th

Since the students are busy with exams, we decided to get our travel in early to the historic parts of Ethiopia. We booked flights up north, and went to Axum, Lalibela, Gonder and Bahir Dar. In Axum we saw the Staela and the church housing the ark of the covenant. In Lalibela the rock-hewn churches; in Gonder Fasil's palace and the Sellassie church. In Bahir Dar, we rented a boat on Lake Tana and visited 2 monestaries on the lake's islands. We saw everything we intended to, with the exception of the Blue Nile Falls which we had planned to see the morning of our flight back to Addis. The mini-bus we hired was late and the driver didn't know how to get there. So after driving there, we had to turn back immediately. Fortunately, we did not pay.

Aug 4 – 5

We were just in Addis this week, but we all got a sampling of the local night life. We went to clubs at Novis, and a club nearby called Divine. The music played was a mix of hip hop, reggae, west African, and Amharic. We also had the best meal of the trip at a local Indian restaurant called Sangaam.

Aug 11 – 12

In Addis again ... went to a great Chinese restaurant on Friday. The guys checked out a local club which another faranji told us was 'shady.' Silvia and Danielle decided to pass on this one.

August 19 – 20

In Addis again ... we had lab on Saturday to help people finish. We also did some souvenir shopping, and had lunch at the Assefa's on Sunday.

August 25-26

This was our last weekend in Addis. We bought some last minute souvenirs, and devoted a lot of time to packing and making sure our luggage was not over the airline weight limit.

Appendix:

I. Contacts

Fitsum Asamnew	IT Contact at University	fisuma@ece.aau.edu.et	091-113-7081
Shewanesh Zejo	Guest House Owner		251-1-16610113
Etsegenet Menberu	Bruck's Mom		091-122-6858 (M)/091-160-5944
Dr Bayou Chane	Dean, Faculty of Technolgy	Bayou_medi@yahoo.com	091-124-4960 (M)/011-123-2435
Tilahun Teklu	Contact at business school		0911242548
Mesret	Bruck's Aunt		0911994537
Yossef	Mesret's brother; guide for trips/driver		

II. Iteneraries

III. Application Form

IV. Final List of Students

V. Syllabus

VI. Schedule

VII. Final Project Write up

VIII. Final Project Example

IX. Student Final Projects