

# A Brief Glimpse Into The Area Of Human-Computer Interaction

An introduction into the area of Human-Computer Interaction (HCI)

A useful technique employed in HCI:  
Task-Centered System Design

## Computer Science Specialties

Most areas tend to focus on the technological aspects of Computer Science.



Hardware



Artificial Intelligence

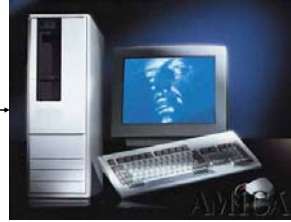
Computer Simulations



# Human-Computer Interaction



Human perspective



Technological perspective

A major part of HCI: How do we design interfaces that are easier to use?

## Some Areas Of HCI

- Task-Centered System Design
- User-Centered Design and prototyping
- Qualitative and quantitative evaluation techniques
- Representations and metaphors
- Human Factors and the psychology of everyday things
- Graphical screen design
- Heuristics for design and evaluation

## Some Areas Of HCI

### ***Task-Centered System Design***

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## The Key Focus Of The Task Centered Approach

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Designing for a faceless user: A pretend person that who will magically mold his or herself to fit your system (elastic)



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Determining *who* will be doing exactly *what* with your system

Designing for Mary Hart: A real person with real constraints who is trying to get her job done (inelastic)



## How To Employ The Task Centered Approach

- 1) Pick a user group that you will build your system for



- 2) Spend time learning about their job and what they plan to do with the system to be built



## How To Employ The Task Centered Approach (2)

- 3) Use this information to produce several task examples

*Task Examples: Are stories that describe the actual usage of the system as well as providing a detailed description of the person who is using that system.*

## How To Employ The Task Centered Approach (3)

### 4) Use these task examples to evaluate some prototype designs

a) Select one of the tasks

b) For each user's step/action in the task:

- can you build a believable story that *motivates* the user's actions?
- can you rely on user's expected *knowledge and training* about system?
- if you cannot:
  - then you've located a problem in the interface!
  - once a problem is identified, assume it has been repaired
- go to the next step in the scenario

## Example: The Cheap Shop Catalog Store

In Cheap Shop, people shop by browsing paper catalogs scattered around the store.

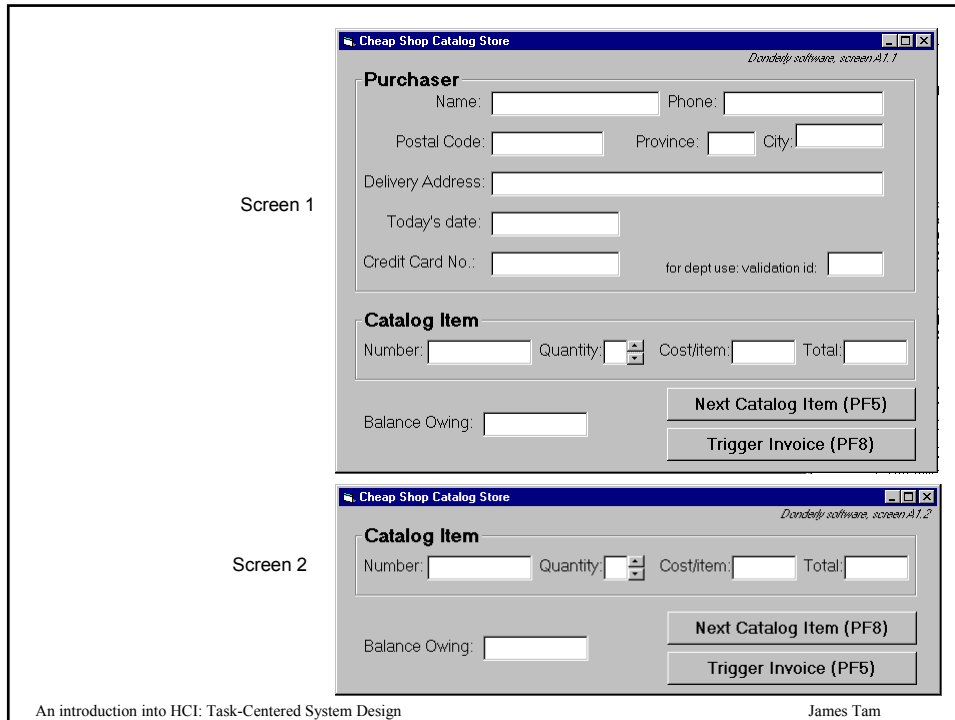
When people see an item they want, they enter its item code from the catalog onto a form.

People give this form to a clerk, who brings the item(s) from the back room to the front counter.

People then pay for the items they want.



Item code	Amount
323066 697	1



## Specifications

### **To create an order**

- On screen 1, shoppers enter their personal information and their first order
- text is entered via keyboard
- the tab or mouse is used to go between fields.

### **Further orders**

- shoppers go to the 2nd screen by pressing the Next Catalog Item button

### **Order completion**

- shoppers select 'Trigger Invoice'.
- the system automatically tells shipping and billing about the order
- the system returns to a blank screen #1

### **To cancel order**

- Shoppers do not enter input for 30 seconds (as if they walk away)
- The system will then clear all screens and return to the main screen

## Developing Task Examples: Cheap Shop

### Task example 1

- Fred Johnson, who is caring for his demanding toddler son, wants a good quality umbrella stroller (red is preferred, but blue is acceptable).
- He browses the catalog and chooses the JPG stroller (cost \$98. item code 323 066 697).
- He pays for it in cash, and uses it immediately.
- Fred is a first-time customer to this store, has little computer experience, and says he types very slowly with one finger. He lives nearby on Deer Bottom Avenue NW.



**JPG Stroller.** This well made but affordable Canadian stroller fits children between 1-3 years old. Its wheels roll well in light snow and mud.  
...\$98.

Red: 323 066 697  
Blue: 323 066 698

## Developing Task Examples: Cheap Shop

### Task example 2

- Millie Varunda is price-comparing the costs of a child's bedroom set, consisting of a wooden desk, a chair, a single bed, a mattress, a bedspread, and a pillow all made by Furnons Inc.
- She takes the description and total cost away with her to check against other stores.
- Three hours later, she returns and decides to buy everything but the chair.
- She pays by credit card,
- She asks for the items to be delivered to her daughter's home at 31247 Lucinda Drive, in the basement suite at the back of the house.
- Millie is elderly and arthritic.



## Developing Task Examples: Cheap Shop

### Task example 3

- Jim Tam, Ace Salesguy™, the sole salesperson in the store, is given a list of 10 items by a customer who does not want to use the computer.
- The items are:
  - 4 pine chairs, 1 pine table, 6 blue place mats, 6 “lor” forks, 6 “lor” table spoons, 6 “lor” teaspoons, 6 “lor” knives, 1 “tot” tricycle, 1 red ball, 1 “silva” croquet set
- After seeing the total, the customer tells Jim he will take all but the silverware
- The customer then decides to add 1 blue ball to the list.
- The customer starts paying by credit card, but then decides to pay cash. The customer tells Jim he wants the items delivered to his home the day after tomorrow. While this is occurring, 6 other customers are waiting for Jim.

## Walkthrough Template

Task number: \_\_\_\_

Description of Step	Does the user have the knowledge/training to do this?	Is it believable that they would do it? Are they motivated?	Comment / solution

## The Area Of HCI Covered

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## What About The Other Areas?

Task-Centered System Design

***User-Centered Design and prototyping***

***Qualitative and quantitative evaluation techniques***

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***Human Factors and the psychology of everyday things***

***Graphical screen design***

***Heuristics for design and evaluation***

## Blatant Marketing Gimmick

Part II to be continued...in CPSC 481. Book your lecture seat now!

## Summary

You should now know:

- How this area of Computer Science explores ways of making computers easier to use.
- How the Task Centered Approach specifies how the user group and their tasks can be used to evaluate different interface designs.