

ICEACE Reference Manual

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1 ICEACE FLAME Implementation

1.1 firm

Table 1: List of memory variables for firm agent.

Name	Description
int id	Agent ID.
int bank_id	Bank ID at which the agent maintains its payment account.
int isconstructor	Identifies if the firm is a constructor firm or not.
int day_of_month_to_act	The day of the month to act
int_array employees	Holds employee ids
double wage_offer	Monthly wage offer.
int no_employees	Number of employees
int vacancies	Number of vacancies
int employees_needed	Number of workers a firm needs for next production
double labour_productivity	Productivity of a unit labour.
double debt	Total debt of the firm.
int inventories	Unsold inventories from previous month.
int sales	Total number of sales within the month.
int production_current	Total number of goods produced in current month.
int production_estimate	An estimate of production for incoming period.
int production_plan	Production plan for next month.
double unit_goods_price	Price of a unit of goods produced by a firm.
int day_of_month_production_completed	The day of the month amount of production is computed.
double unit_house_price	Unit price of an house.
double labour_productivity_construction	Productivity of a unit labour in construction sector.
double capital_productivity_construction	Capital productivity in construction sector.
double capital_construction	Upper amount of constraction capital in housing.
int projects	Holds projects under construction. Indices denote number of months left for completion.

Table 2: **List of functions for firm agent.**

Name	Description
firm_notifier	Notifies its id by printf.
firm_consumption_dummy	A dummy stub function.
idle	Labour market is not active.
firm_labour_workforce_needed	The firm computes required number of employees needed for incoming month.
idle	Firm does nothing
firm_labour_fire	The firm decides to fire if employee needed is below number of employees it does have.
firm_labour_job_announcement_stage1	The agent posts available positions.
firm_labour_job_offer_stage1	The agent takes job matches done by jpooffice.
firm_labour_update	The agent updates labour status. In case of resignments.
firm_labour_job_announcement_stage2	The agent posts unfilled positions.
idle	The agent has no vacant positions
firm_labour_job_offer_stage2	The agent completes the job placement.
idle	It is not the end of month or the first day of the month.
idle	The state serves to differentiate regular and constructor firms.
idle	Sets a producer role.
idle	Set the constructor role.
firm_production_produce_goods	Firm audits number of items produced. Updates inventory accordingly.
firm_production_set_price	Firm sets price of goods produced.
firm_production_plan	Firm determines number of items to be produced for the next period.
firm_production_compute_labour_demand	Firm determines required number of labourers for current production plan.
firm_production_construct_houses	Firm releases number of items produced. Updates project status accordingly.
firm_production_construction_plan	Firm sets the construction project plan.
firm_production_construction_labour_demand	Firm determines required number of labourers for current construction plan.

1.2 household

Table 3: **List of memory variables for household agent.**

Name	Description
int id	Agent ID.
int bank_id	Bank ID at which the agent maintains its payment account.
int my_employer_id	Employer ID of an household. A 0 means unemployed.
double wage	Current wage earned.
int day_of_month_to_act	The day of the month to act for seeking a job.
int day_of_month_wage_recieved	The day of the month to wage recieved.
int previous_wages	Holds wages earned in three previous months.

Table 4: **List of functions for household agent.**

Name	Description
household_notifier	Notifies its id by printf.
household_consumption_dummy	A dummy stub function.
idle	Job searching is not active.
household_labour_check_fired	Household checks layout status.
household_labour_reemployment_application	Stage 01 of job applications. Already employed households apply with a turnover probability
idle	Stage 01 of job applications. Unemployed households skip this stage
household_labour_turnover	A job turnover.
household_labour_employment_application	Stage 02 of job market. Unemployed households apply.
household_labour_employment	A new employment.
idle	Does nothing at the point when it is not last day of the month.
household_labour_recieve_wage	Recieves payment and update wage history.
idle	Household stays idle in production market.

1.3 jpoffice

Table 5: **List of memory variables for jpoffice agent.**

Name	Description
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Table 5 – continued from previous page

Name	Description
int id	Agent ID.
int day_of_month_to_act	The day of mont to perform job matching.

Table 6: List of functions for jpooffice agent.

Name	Description
jpooffice_notifier	Notifies its id by printf.
idle	Job matching is not active.
jpooffice_labour_stage1	Collecting vacancies and job applications. Vacancies and turnover applications are matched.
jpooffice_labour_stage2	Second stage job matching.

1.4 bank

Table 7: List of memory variables for bank agent.

Name	Description
int id	Agent ID.

Table 8: List of functions for bank agent.

Name	Description
bank_notifier	Notifies its id by printf.
bank_consumption_dummy	A dummy stub function.
idle	Bank stays idle in labour market.
idle	Bank stays idle in production market.

1.5 government

Table 9: List of memory variables for government agent.

Name	Description
int id	Agent ID.

Table 10: **List of functions for government agent.**

Name	Description
government_notifier	Notifies its id by printf.
government_consumption_dummy	A dummy stub function.
idle	Government stays idle in labour market.
idle	Government stays idle in production market.

1.6 centralbank

Table 11: **List of memory variables for centralbank agent.**

Name	Description
int id	Agent ID.

Table 12: **List of functions for centralbank agent.**

Name	Description
centralbank_notifier	Notifies its id by printf.
centralbank_consumption_dummy	A dummy stub function.
idle	Central Bank stays idle in labour market.
idle	Central Bank stays idle in production market.

1.7 Messages

See Table 13.

Table 13: **List of messages.**

Name	Description
fired int employee_id	Sent by a firm to notify an employee who is fired. Employee ID who has been fired.
vacancy_stage1 int employer_id double wage	Sent by a Firm to post a vacancy. Firm agent ID who posts a new position. Amount of salary to be offered.
job_application_stage2 int employee_id	Sent by an household to apply a posted vacancy. Household agent ID who seeks employment.

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Table 13 – continued from previous page

Name	Description
job_application_stage1	Sent by an household to notifie jpooffice
int employee_id	Household agent ID who applies for a new job.
double wage	Current amount of wage earned by the applicant.
job_match_stage1	Sent by a firm informing a filled position.
int employer_id	Firm agent ID that has filled a post.
int employee_id	Household agent ID who has been offered a position.
double wage	Amount of salary that is offered.
job_change	Sent by a worker to notify a resigned position.
int employer_id	Firm agent ID of the position held.
int employee_id	Household agent ID who is changing the job.
vacancy_stage2	Sent by a Firm to post unfilled vacancy.
int employer_id	Firm agent ID who posts unfilled position.
double wage	Amount of salary to be offered.
job_match_stage2	Sent by a firm informing a filled position.
int employer_id	Firm agent ID that has filled a post.
int employee_id	Household agent ID who has been offered a position.
double wage	Amount of salary that is offered.

1.8 Constants

Table 14: List of constants.

Name	Description
double turnover_probability	A probability of a uniform distribution that determines turnover rate.
double housing_expenditure	A threshold value denoting expenditure on housing, as a proportion of total income
double ratio_debt_firm	Ratio of debt to be paid by a firm.
double production_markup	Rate of increase in production by firms.
double price_markup	Rate of increase set by firms on prices.
double firm_memory_persistence	A paramter holding to what extend firms previous sale history play on final production decision.

1.9 Datatypes

Table 15: List of attributes for ADTs.

Name	Description
vacancy	Firm vacancy information.
int id	Id of the firm agent.
double wage	Wage offered by the firm that holds the vacancy.

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Table 15 – continued from previous page

Name	Description
employee	Job applicant data.
int id	Id of the household agent.
double wage	Current wage of the job applicant.