$$\text{Arith} ::= \text{integer} \mid \text{"}-\text{" Arith} \mid \text{Arith "}+\text{" Arith} \mid \text{"(" Arith ")"}$$

$$e ::= i \mid -e \mid e + e$$

U_s = Subjects Attributes.
U_e = Environment Attributes.
U_r = Resource Attributes

Ex: Policy (Subject s, Environment e, Resource r)

$$= \text{matricNo}(s) = \text{"2227777"}$$
$$\wedge \text{ date}(r) \geqslant \text{today}(e)$$
$$\wedge \text{ role}(s) = \text{Lecturer}.$$

$U_s ::= $ Role : Professor | Reader | Senior Lecturer | Lecturer |
LTS-Lecturer | Research Associate | Tutor |
Demonstrator ~~maaaana~~, Staff | Student

↑ Subject

| RschGroup : GIST | FATA | IDA | GLASS | CSE
| JobTitle : Head of School | Head of Section | Head of
Theme | Professor | Reader | Senior Lecturer |
Lecturer | LTS-Lecturer | Research Associate
Tutor | Demonstrator

| JobField : Research & Teaching | Tutors & Demonstrators |
Associate | Professional, Administrative & Support
Honorary & Visiting

| Department : DCS | DC | DE | DGES | DMS | DPA | DP
| College : College of Science & Engineering | College of
Arts | College of Social Sciences | College
of Medical, Veterinary & Life Sciences

e, ϵ

$\{S, E, R\}$

$\backslash n$

$\backslash r$

```
| Level          :  1 | 2 | 3 | 4 | MSci | Postgraduate
| account Status :  Active | Suspended | Inactive
| enrolled Courses : 1016|1001 |1017|1018|...
                     2003|2007|2001|2024|...
                     3005|3004|
                     4002|4021|4071|4022|...
                     5002|5083|5004|5056|...
| matriculated : <Date>: 19/09/15.
| will Graduate : <Date>: 21/06/19.
| start Date   : <Date>: 17/09/18    } job-related
| end Date     : <Date>: 08/04/19    )
| student Role : Class Rep | Demonstrator UG | Tutor |
|  demonstrator  Demonstrator PG | Grad Teaching Assistant
| demonstrator Class : 1CT|1P|1PX|2JP|200SE
| coordinator : <courseCode>: 3005| 5083|2024|...
| head Lecturer : <CourseCode>: 2007|1001|4021|...
| team Or Group : Systems|MIG|HUSH|NS|GPG|IDI|
                  CVAS|MOG|IRI|...
```

$\left\{ \begin{array}{l} \text{Series A} \\ \text{Series B} \end{array} \right\}^2$

$\left(\begin{array}{l} 79\% \downarrow_2 \\ 79\% \downarrow_2 \\ 79\% \downarrow \end{array} \right.$

$\left(\begin{array}{l} \$2.61 \\ \$4.67 \\ \$8.36 \end{array} \right)$ 1/18

$$U_e ::= $$

Network : External | Internal | Unknown
| Internal : DCS | Campus | Library | Roaming
| Connection : IPv4 | IPv6 | HTTP | HTTPS
| Server Events : Busy | Error | Normal | Urgent | Unknown |
    Maintenance | Migration | Upgrade
| Dates : <Date> : Server Time | Device Time |
    Request Time | Response Time
| Location : Server Location | GPS | IP Geolocation
| Device : Desktop | Laptop | Portable | Handheld |
    Unknown | Mobile | Tablet
| device OS : Windows | UNIX | iOS | macOS | Android |
    Unknown
| request : srcAddress | srcPort | srcMAC | srcClient
| Locale : language | location
| client : version | ABEversion | keyValidity
| server : version | compatibility | storage
| ABELife : updatedAt | nextUpdate | supportsBackTo
| key : creationDate | expiryDate | authority |
    owner | updatedAt.

environment

$U_\rho ::=$ Format : noFiles | format | MIME

→ resource

| Owner/Author : noAuthors | \<Subject\> Owner | Collabo
| Collaborators : \<Subject\> Collaborator
| College : College
| School : School
| Level : 1 | 2 | 3 | 4 | M | PG | Staff
| Date Created : \<Date\> : 01/06/13
| Date Modified : \<Date\> : 07/11/17
| release Date : \<Date\> : 08/09/20
| Title : "A Great Document"
| Course : \<Course Code\> 1003 | 2007 | ...
| File Size : 143, 761 bytes
| Extension : JPG | PNG | DOCX | TXT | PDF |
| related Docs : \<Resource\>
| version : \<semVer\> : 0.0.2 | 1.0.7 | 3.4.0 | .
| modified By : \<Subject\> : Modifier
| ABE Version : \<semVer\> : 0.3.1 | 4.0.1 | ...
| authority : Server For Signing

1. Attempt to download JOOSE2 coursework.

Subject s => Role, JobField, Level, Enrolled Courses, startDate,
~~Object o =~~> endDate, demonstratorClasses, accountStatus
Environment e => CurrentDate, Network
Resource r => ReleaseDate, Owner

$$Policy\ (s, o, e) \leftarrow Owner\ (r) \equiv s$$
$$\lor\ (Role\ (s) \equiv Staff$$
$$\land\ JobField\ (s) \equiv Research\ \&\ Teaching)$$
$$\lor\ (Role\ (s) \equiv Student$$
$$\land\ Level\ (s) \equiv 2$$
$$\land\ EnrolledCourses\ (s) \equiv 2001, 2008$$
$$\land\ CurrentDate\ (e) \geqslant ReleaseDate\ (r)$$
$$\land\ Network\ (e) \equiv Internal\ )$$
$$\lor\ (Role\ (s) \equiv Student, Demonstrator$$
$$\land\ Level\ (s) \equiv 4, M, PG$$
$$\land\ startDate\ (s) \leq CurrentDate\ (e)$$
$$\land\ endDate\ (s) \geqslant CurrentDate\ (e)$$
$$\land\ demonstratorClasses \equiv 2JP, 2OOSE)$$
$$\land\ accountStatus\ (s) \equiv Active$$

2. Download minutes from class rep meeting.

Subject s => accountStatus, studentRole, startDate, endDate

Resource r => CurrentDate

Environment e => ReleaseDate, Owner

$$Policy(s, r, e) \leftarrow accountStatus(s) \equiv Active$$
$$\wedge \,(\,(Role(s) \equiv Student$$
$$\wedge \; studentRole(s) \equiv ClassRep$$
$$\wedge \; ReleaseDate(r) \leq CurrentDate(e)$$
$$\wedge \; \cancel{startDate(s) \leq} \; \cancel{CurrentDate(e)} \; ReleaseDa$$
$$\wedge \; endDate(s) \geq \; \cancel{CurrentDate(e)} \; ReleaseD$$
$$\wedge \; startDate(s) \leq CurrentDate(e)$$
$$\wedge \; endDate(s) \geq CurrentDate(e))$$
$$\vee \,(Role(s) \equiv Staff$$
$$\wedge \; startDate(s) \leq CurrentDate(e)$$
$$\wedge \; endDate(s) \geq CurrentDate(e))$$
$$\vee \; \cancel{Role(s} \; Owner(r) \equiv s)$$